Phytoplankton Productivity Experiments in British Columbia Coastal Waters, 1986

by
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En général, les rapports contiennent des données brutes ou analysées mais ne fournissent pas d'interprétations des données. Ces compilations sont préparées le plus souvent à l'appui de travaux reliés aux programmes et intérêts du service des Sciences et Levés océaniques (SLO) du ministère des Pêches et des Océans.

Les rapports statistiques sont produits à l'échelon régional mais sont numérotés et placés dans l'index à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page de titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

Les établissements des Sciences et Levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports depuis décembre 1981. Vous trouverez dans l'index des publications du volume 38 du *Journal canadien des sciences halieutiques et aquatiques*, la liste de ces publications ainsi que le dernier numéro paru dans chaque catégorie. La nouvelle série a commencé avec la publication du Rapport n° 1 en janvier 1982.

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RÉSUMÉ

Forbes, J.R., S.L. Buckingham and A.T. Earmme. 1987. Phytoplankton productivity experiments in British Columbia coastal waters, 1986. Can. Data Rep. Hydrogr. Ocean Sci. 56: 169 p.

On donne les résultats d'expériences sur la productivité par rapport à l'intensité de lumière [P(I)] réalisees lors de deux expéditions effectuées dans les eaux de la côte ouest de l'Îsle Vancouver.

Les données ont été ajustées au modèle de Jassby et Platt (1976), lequel utilise une équation empirique qui décrit la photosynthèse comme une fonction continue de la lumière. Les paramètres ajustés et dérivé, les diagrammes des données simple et de courbes ajustées, de même que les données associés sont présentés pour chaque expérience.

Mots-clés: données, productivité, lumière, phytoplancton

ABSTRACT

Forbes, J.R., S.L. Buckingham and A.T. Earmme. 1987. Phytoplankton productivity experiments in British Columbia coastal waters, 1986. Can. Data Rep. Hydrogr. Ocean Sci. 56: 169 p.

The results of productivity versus irradiance [P(I)] experiments performed on two cruises off the west coast of Vancouver Island are reported.

Data were fitted to the model of Jassby and Platt (1976), which uses an empirical equation that describes photosynthesis as a continuous function of irradiance. Fitted and derived photosynthetic parameters, plots of data points and fitted curves, and associated station data are presented for each experiment.

KEYWORDS: data, productivity, light, phytoplankton

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Personnel of C.S.S. **Parizeau** provided excellent support for this project.

INTRODUCTION

This report provides details of phytoplankton productivity versus irradiance [P(I)] experiments from two cruises in southern British Columbia coastal waters during 1986. These experiments had two objectives. First, they were part of a project to investigate the impact of plumes originating on the continental shelf on the export of organic matter off the shelf. Second, characteristics of diel variability in photosynthetic parameters were examined in order to obtain better estimates of integrated production for this area. Additional data from the two cruises will be reported in the Canadian Data Reports of Hydrography and Ocean Sciences series.

Studies on cruise 86-03, from 9 June to 3 July 1986, were concentrated on the continental shelf off the southwest coast of Vancouver Island. Three time series of P(I) experiments following drogued drifters were undertaken. Cruise 86-04, from 18 to 28 August 1986, involved a more extensive area, with work along the full length of the west coast of Vancouver Island. One time series of P(I) experiments was performed on the continental shelf and a second offshore. All time series were of approximately 48 hours duration.

METHODS

1. Sampling Methods

Surface samples were taken by polyethylene bucket immediately adjacent to the ship. Temperature was recorded and subsamples were taken for analysis of productivity, chlorophyll *a*, pH and salinity.

Subsurface samples were collected using a rosette sampler with a full data acquisition system and an array of Niskin bottles. The sampler was equiped with sensors to measure conductivity, temperature and depth (Guildline model 8701 digital CTD); chlorophyll fluorescence (Variosens III *in situ* fluorometer); beam attenuance (Sea-Tech 0.25m path length transmissometer); and photosynthetically active quantum scalar irradiance (PAR) (Licor 193SB spherical quantum irradiance sensor). Estimated precision and accuracy of these sensors were described in Hill et al. (1983). Above surface photosynthetic photon flux density was continuously recorded using a Licor LI-190SB quantum sensor. The manufacturer specifies an accuracy of ± 5%, a relative error of the spectral response of < ±5%, and a stability of <2% per year.

Water for P(I) experiments was drawn directly from Niskin bottles into dark polyethylene bottles for subsampling in the ship's laboratory. This avoided direct exposure to surface irradiance. We did not attempt to protect samples from contact with the potentially inhibiting components within the Niskin bottles.

2. Determination of Photosynthetic Parameters

Carbon uptake was measured by adding between 4.40 and 8.80MBq $NaH^{14}CO_3$ to a 150mL sample. After thorough mixing, 25 5mL subsamples were placed in glass scintillation vials and incubated in a miniature incubator similar to that of Lewis and Smith (1983). The final activity per subsample ranged from 0.15 to 0.29MBq ^{14}C. Subsamples were incubated for 1 hour under a range of irradiance values from 0 to 600 μEin s^{-1} m^{-2}. The light source was a 500W tungsten-halogen lamp, with output spectrum modified by passage through a water filter, mylar film and translucent blue plastic (Rohm and Haas 2069). PAR at the location of each subsample was measured with a Biospherical Instruments QSL100 quantum sensor. Following incubation, subsamples were immediately frozen at -40°C in the dark. After the cruise, they were thawed, 0.5mL 6N HCl was added to each subsample, and they were shaken for 1 hour, while exposed to air, to remove all remaining inorganic radioisotope. 7.5mL PCSII scintillation fluor (Amersham) was added to each, and activity was measured using an LKB 1217 liquid scintillation counter. Counting efficiency was determined by the addition of internal standards (LKB-Wallac Internal Standards capsules) to a representative set of 10 subsamples. Efficiency was found to be constant: 85% ±1s.d. 1%. Standard laboratory precautions for cleanliness were taken throughout, however, the protocols recommended by Fitzwater et al. (1982) for protection from metal contamination were not followed.

P(I) data were fitted to the hyperbolic tangent function of Jassby and Platt (1976) using the routine 'Curfit' (Bevington, 1969), which performs a non-linear least squares fit using the Marquardt algorithm. The model is of the form:

$$P^B = P^B_m \tanh (\alpha I / P^B_m)$$

where: P^B = normalized carbon uptake
($mg\ C\ (mg\ Chl\ \underline{a})^{-1}\ h^{-1}$

P^B_m = maximum carbon uptake under optimal irradiance
($mg\ C\ (mg\ Chl\ \underline{a})^{-1}\ h^{-1}$

α = initial slope
($mg\ C\ (mg\ Chl\ \underline{a})^{-1}\ h^{-1}\ (\mu Ein\ s^{-1}\ m^{-2})^{-1}$)

I = irradiance
($\mu Ein\ s^{-1}\ m^{-2}$)

Two derived parameters were calculated for each experiment. The first, I_m, is the irradiance at which $P^B = P^B_m$. The second derived parameter, I_k, is a commonly used index of light adaptation.

$$I_m = P^B_m / \alpha \quad x\ -In(\alpha)$$

$$I_k = P^B_m / \alpha$$

The units for both derived parameters are $\mu Ein\ s^{-1}\ m^{-2}$.

The adequacy of the fit of the data was tested for each experiment by determining the variance of the data about the fitted curve:

$$r2 = (A - B) / A$$

where:

$$A = \Sigma (y - \bar{y})2 / (n - 1)$$

$$B = \Sigma (y - \hat{y})2 / (n - 3)$$

Where the correlation coefficient (r) was not significant at $p < 0.05$ the data were assumed to be inadequate to describe the curve fully and the experiment was not considered further.

We estimated the precision of estimates of the photosynthetic parameters by performing 21 duplicate P(1) experiments. Two 150mL samples were taken from a single Niskin bottle and experiments performed as described above. The mean coefficient of variation for estimates of P^B_m was 8% with a range from 0 to 33%. For α the mean coefficient of variation was 14.7%, with a range from 1.4 to 62.4%.

3. Chlorophyll *a*

Extracted chlorophyll *a* was determined by fluorometry (Parsons et al., 1984). Duplicate samples, normally 50mL, were filtered onto 25mm glass fiber filters (Whatman GF/F), with 100mm Hg vacuum. Approximately 0.5mL 1% $MgCO_3$ suspension was added to the sample just prior to completion of filtration. Chlorophyll was extracted in 90% aqueous acetone by grinding in a tissue grinder. The extract was clarified by refiltration through a glass fiber filter and the fluorescence of the filtrate measured

with a Turner Designs 10 fluorometer. The sample was acidified with 2 drops 1.5N HCl and the fluorescence was redetermined after the reading had stabilized.

Chlorophyll *a* content was determined using the equations in Parsons et al. (1984). The fluorometer had been previously calibrated against a Perkin Elmer Hitachi 200 spectrophotometer using a crystalline chlorophyll *a* (Sigma Chemical Co.). Chlorophyll concentrations in the calibration samples were determined using the equations of Jeffrey and Humphrey (1975).

The mean coefficient of variation for chlorophyll measurements using this method is 4.9%. Details of the determination of this are in Forbes et al. (1983)

4. Dissolved Inorganic Carbon

Dissolved inorganic carbon was determined by the method of Strickland and Parsons (1972), assuming a specific alkalinity of 0.123 and seawater density of 1.025. *In situ* temperature and salinity were derived from CTD profiles. pH was measured with a digital pH meter having a nominal relative accuracy of ±0.002 pH.

5. Navigation and Time

Positioning was obtained by Loran-C. Sampling times were recorded in zone time (Pacific Daylight Time: PDT) and converted to Local Apparent Time (LAT), as outlined in Forbes et al. (1983).

REFERENCES

Bevington, P.R. 1969. Data reduction and error analysis for the physical sciences. McGraw-Hill Book Co., New York. 336 p.

Fitzwater, S.E., G.A. Knauer, J.H. Martin. 1982. Metal contamination and its effect on primary production. Limnol. Oceanogr. 27: 544-551.

Forbes, J.R., H.A. Sefton, K. de Macedo. 1983. Phytoplankton productivity experiments in British Columbia coastal waters, 1982 and 1983. Can. Data Rep. Hydrogr. Ocean Sci. 14: 193 p.

Hill, S., K. Denman, D. Mackas, H. Sefton, R. Forbes. 1983. Ocean Ecology data report: coastal waters off southwest Vancouver Island. Spring and summer 1981. Can. Data Rep. Hydrogr. Ocean Sci. 8: 93 p.

Jassby, A.D., T. Platt. 1976. Mathematical formulation of the relationship between photosynthesis and light for phytoplankton. Limnol. Oceanogr. 21: 540-547.

Jeffrey, S.W., G.F. Humphrey. 1975. New spectrophotometric equations for determining chlorophylls a, b, c_1 and c_2 in higher plants, algae and natural phytoplankton. Biochem. Physio. Pflanz. 167: 191-194.

Lewis, M.R., J.C. Smith. 1983. A small volume, short-incubation-time method for measurement of photosynthesis as a function of incident irradiance. Mar. Ecol. Prog. Ser. 13: 99-102.

Parsons, T.R., Y. Maita, C.M. Lalli. 1984. A manual for chemical and biological methods for seawater analysis. Pergamon Press, Oxford. 173 p.

Strickland, J.D.H., T.R. Parsons. 1972. A practical handbook of seawater analysis. Fish. Res. Bd. Can. Bull. 167 (second edition): 310 p.

PHOTOSYNTHETIC PARAMETERS: UNITS AND FORMS USED IN TABLES

Parameter	Form in tables	Units
P^B		mg C (mg Chl *a*)$^{-1}$ h^{-1}
P^B_m	Pm	mg C (mg Chl *a*)$^{-1}$ h^{-1}
α	a	mg C (mg Chl *a*)$^{-1}$ h^{-1} (μEin s^{-1} m^{-2})$^{-1}$
I		μEin s^{-1}m^{-2}
I_m	Im	μEin s^{-1}m^{-2}
I_k	Ik	μEin s^{-1}m^{-2}

STATION POSITIONS

Cruise 86-03

Station	Date	Time (PDT)	Latitude (N)	Longitude (W)
69	86.06.21	0039	48 24.5	125 11.3
70	"	0232	48 25.2	125 11.1
71	"	0408	48 26.3	125 10.9
72	"	0614	48 26.3	125 10.7
73	"	0815	48 25.3	125 11.7
74	"	1017	48 25.2	125 14.2
75	"	1215	48 25.6	125 19.4
76	"	1411	48 26.3	125 20.0
77	"	1615	48 28.1	125 16.7
78	"	1809	48 28.0	125 13.7
79B	"	2024	48 27.4	125 12.3
80	"	2228	48 24.9	125 13.1
81	86.06.22	0023	48 24.5	125 14.2
82	"	0215	48 25.1	125 15.8
83	"	0423	48 26.7	125 16.1
84	"	0623	48 27.2	125 14.7
85	"	0803	48 25.8	125 15.0
86	"	1005	48 25.1	125 15.2
87	"	1313	48 24.5	125 17.6
88	"	1414	48 25.9	125 20.1
89	"	1650	48 28.4	125 15.9
90	"	1909	48 28.4	125 13.1
91	"	2037	48 27.3	125 12.3
92	"	2334	48 25.5	125 13.6
99	86.06.23	1303	48 26.4	125 23.0
104	86.06.26	0624	48 41.4	125 40.1
105	"	0812	48 42.4	125 40.6
106	"	1016	48 42.5	125 38.9
107	"	1216	48 41.9	125 39.8
108	"	1421	48 42.0	125 41.2
109	"	1612	48 27.3	125 42.6
110	"	1807	48 43.5	125 42.0
111	"	2014	48 44.2	125 41.1
112	"	2214	48 41.8	125 37.2
113	86.06.27	0017	48 42.2	125 37.7
114	"	0209	48 40.7	125 38.7
115	"	0422	48 40.6	125 39.7
116	"	0617	48 41.8	125 42.4
117	"	0816	48 42.4	125 42.4
118	"	1013	48 42.7	125 42.8
119	"	1214	48 43.0	125 43.2
120	"	1420	48 42.6	125 44.1
121	"	1621	48 42.8	125 45.5
122	"	1802	48 45.7	125 46.5
123	"	2015	48 45.8	125 44.6
124	"	2219	48 46.5	125 43.2
125	86.06.28	0017	48 44.8	125 42.5

Cruise 86-03 continued

Station	Date	Time (PDT)	Latitude (N)	Longitude (W)
126	86.06.28	0218	48 44.0	125 42.2
127	"	0421	48 43.4	125 43.3
128	"	0612	48 43.0	125 47.0
133	86.06.29	0500	48 40.0	126 21.0
135	"	0740	48 39.8	126 20.7
136	"	0927	48 39.9	126 20.6
137	"	1121	48 39.8	126 21.1
138	"	1322	48 40.1	126 19.8
139	"	1510	48 40.0	126 18.2
140	"	1707	48 39.8	126 16.7
141	"	1922	48 38.4	126 16.4
142	"	2112	48 38.8	126 14.1
143	"	2328	48 38.4	126 14.2
144	86.06.30	0121	48 38.3	126 15.9
145	"	0323	48 37.9	126 14.1
146	"	0516	48 37.4	126 14.1
147	"	0716	48 37.9	126 13.5
148	"	0945	48 38.4	126 12.2
149	"	1122	48 37.8	126 11.2
150	"	1317	48 37.9	126 12.7
151	"	1514	48 38.5	126 14.2
152	"	1714	48 38.4	126 13.0
153	"	1908	48 38.9	126 11.9
154	"	2109	48 39.7	126 10.2
155	"	2315	48 39.5	126 09.8
156	86.07.01	0116	48 39.7	126 09.8
157	"	0314	48 39.4	126 10.1
158	"	0514	48 40.2	126 10.1
159	"	0712	48 39.9	126 09.8

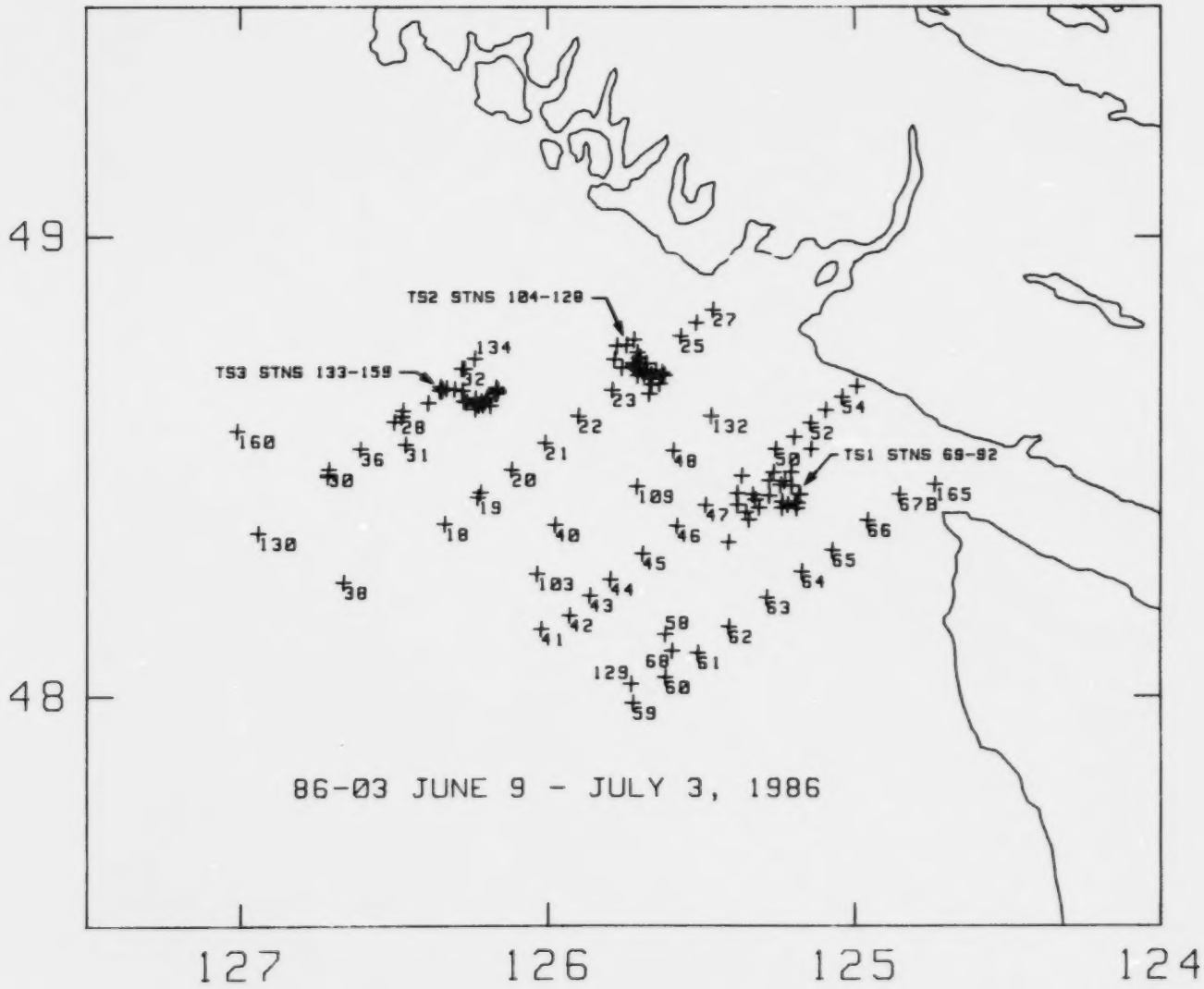
Cruise 86-04

Station	Date	Time (PDT)	Latitude (N)	Longitude (W)
24	86.08.20	0935	49 25.0	127 32.1
25	"	1219	49 25.1	127 01.9
26	"	1433	49 22.4	127 29.4
27	"	1610	49 21.7	127 29.3
28	"	1804	49 21.2	127 28.9
29	"	2007	49 21.0	127 29.0
30	"	2206	49 20.6	127 28.5
31	86.08.21	0016	49 20.3	127 27.6
32	"	0238	49 19.8	127 27.6
33	"	0409	49 18.9	127 27.6
34	"	0620	49 18.5	127 27.7
35	"	0805	49 18.3	127 27.9
36	"	1008	49 17.7	127 27.9
37	"	1219	49 17.1	127 26.9
38	"	1409	49 17.3	127 26.4

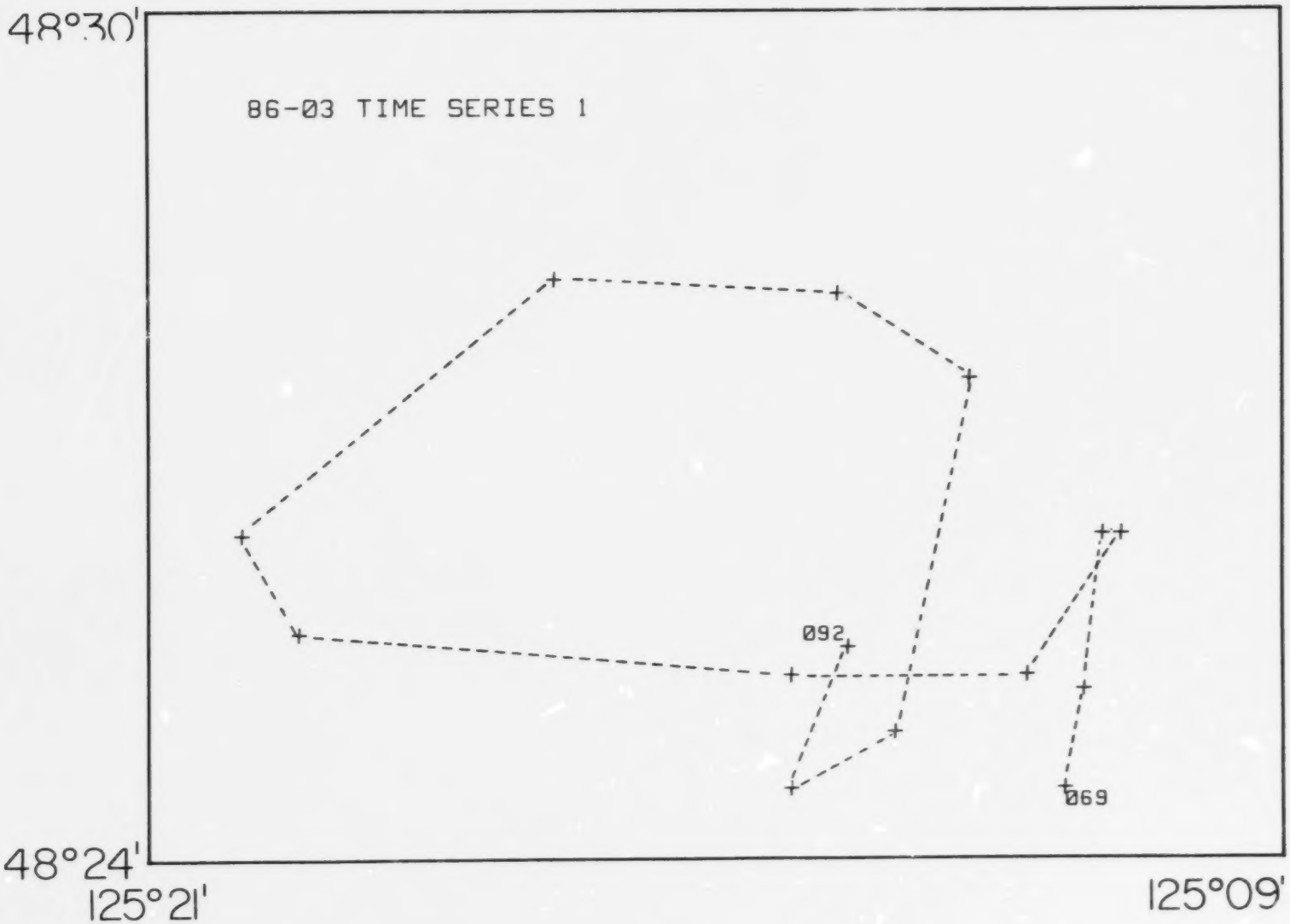
Cruise 86-04 continued

Station	Date	Time (PDT)	Latitude (N)	Longitude (W)
39	86.08.21	1601	49 16.8	127 26.5
40	"	1828	49 16.1	127 26.3
41	"	2008	49 15.5	127 25.4
42	"	2233	49 15.8	127 24.1
43	86.08.22	0018	49 16.3	127 23.2
45	"	0413	49 16.4	127 23.2
46	"	0620	49 16.0	127 21.4
47	"	0805	49 16.2	127 21.9
48	"	1009	49 16.7	127 22.0
49	"	1229	49 17.4	127 21.3
50	"	1409	49 17.6	127 20.3
51	"	1551	49 18.5	127 19.1
52	"	1803	49 18.1	127 18.2
61	86.08.23	1659	49 33.0	126 00.5
68	"	2324	48 50.4	125 27.7
71	86.08.24	0204	48 58.4	125 47.1
73	"	0316	48 53.2	125 57.0
75	"	0523	48 46.2	126 10.2
77	"	0712	48 39.2	126 23.4
79	"	0920	48 32.2	126 36.6
80	"	2153	49 13.7	126.56.7
84	86.08.25	0912	48 17.5	128 19.3
85	"	1144	48 16.7	128 18.9
86	"	1311	48 16.0	128 18.9
87	"	1514	48 15.8	128 18.9
88	"	1711	48 15.3	128 19.2
89	"	1918	48 16.3	128 17.0
90	"	2112	48 16.1	128 17.3
91	"	2259	48 15.4	128 16.4
92	86.08.26	0124	48 14.9	128 16.8
93	"	0319	48 14.5	128 16.5
94	"	0509	48 14.7	128 17.7
95	"	0704	48 14.6	128 17.0
96	"	0920	48 14.6	128 16.2
97	"	1107	48 13.9	128 16.5
98	"	1340	48 13.5	128 17.6
99	"	1542	48 13.2	128 18.1
100	"	1714	48 13.9	128 18.3
101	"	2009	48 14.1	128 18.5
102	"	2217	48 12.2	128 18.9
103	"	2341	48 11.6	128 18.3
104	86.08.27	0130	48 11.1	128 19.3
105	"	0311	48 10.2	128 19.7
106	"	0536	48 09.6	128 19.8
107	"	0744	48 09.1	128 20.0
121	86.08.28	1110	48 08.5	126 00.0

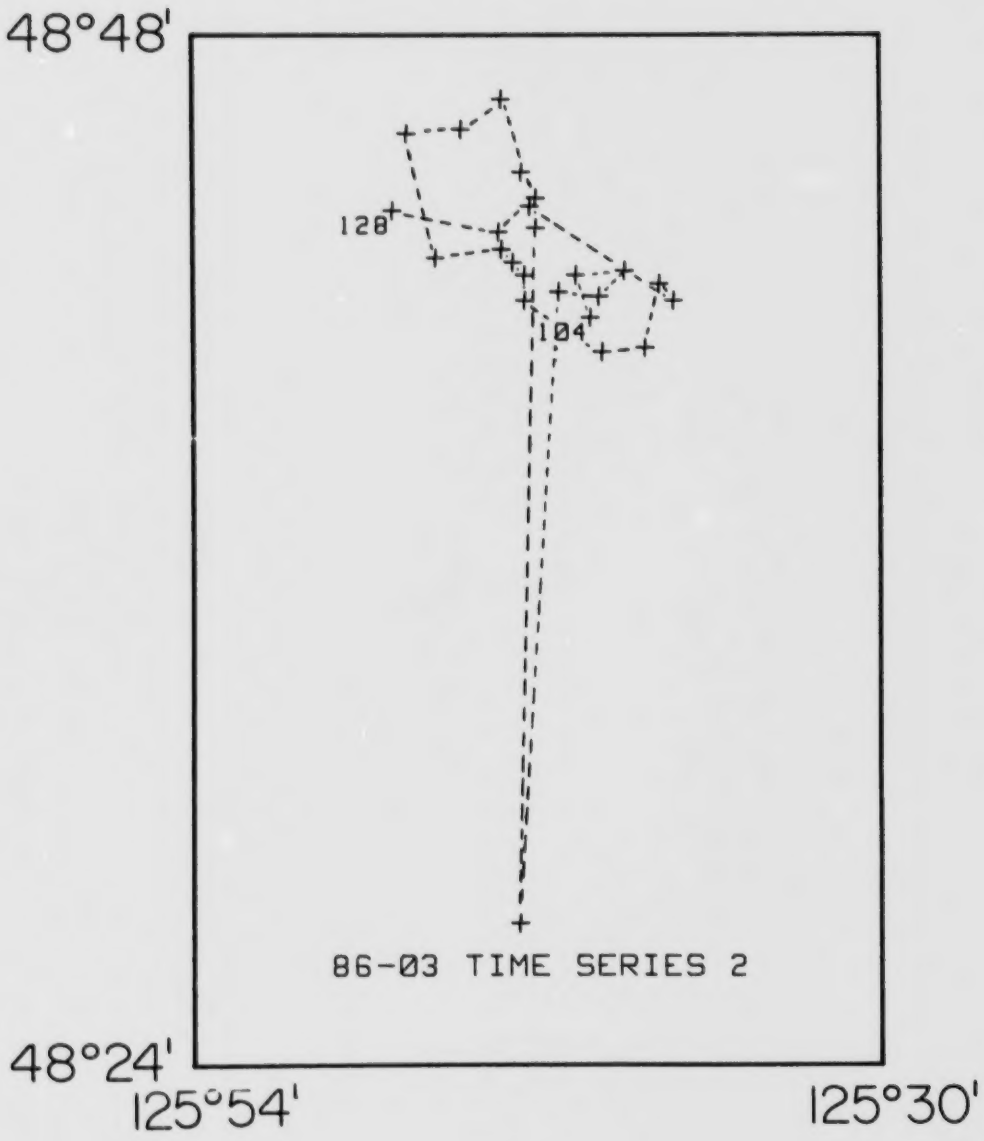
Cruise 86-03: station posi
clusters for time series 1 positions. TS1, TS2 and TS3 label station
ies 1, 2 and 3.


TS2 STNS 104-120
TS3 STNS 133-159
TS1 STNS 69-92
86-03 JUNE 9 - JULY 3, 1986
49
48
127
126
125
124

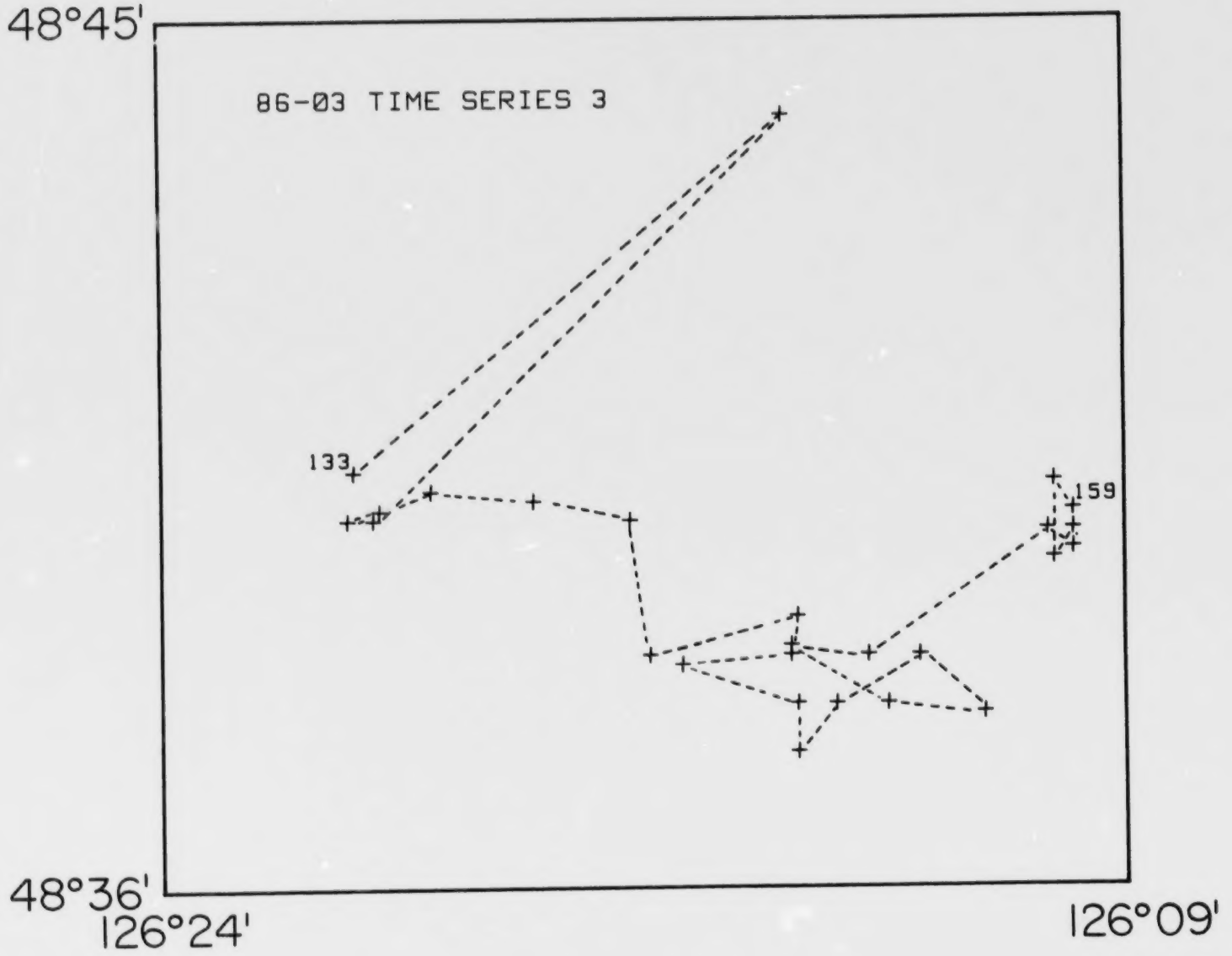
Cruise 86-03: drogued drifter track for time series 1.


48°30'
86-03 TIME SERIES 1
092
069
48°24'
125°21'
125°09'

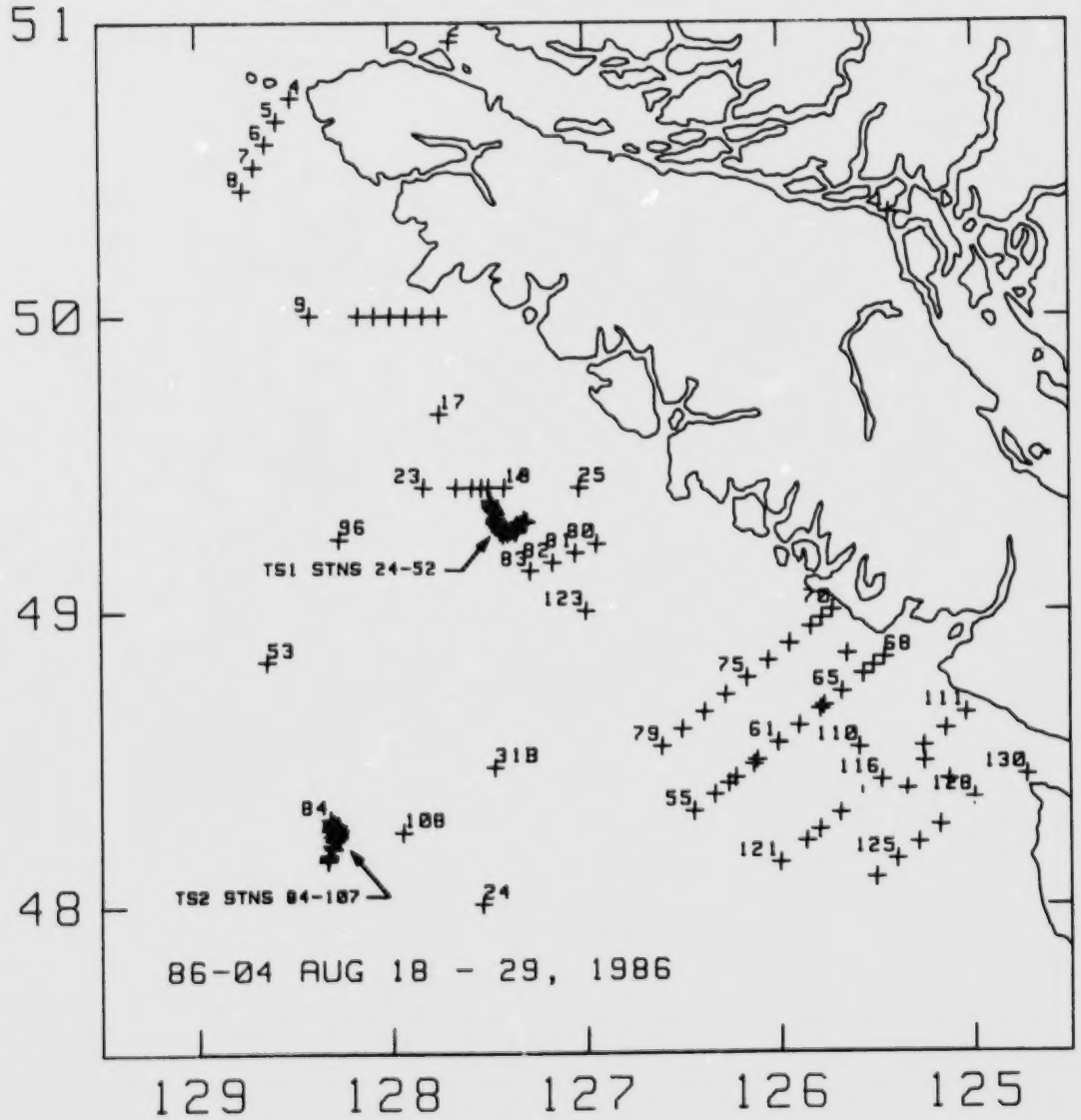
Cruise 86-03: drogued drifter track for time series 2. Time series was interrupted to sample at station 109 (extreme southern station).


48°48'
128
104
86-03 TIME SERIES 2
48°24'
125°54'
125°30'

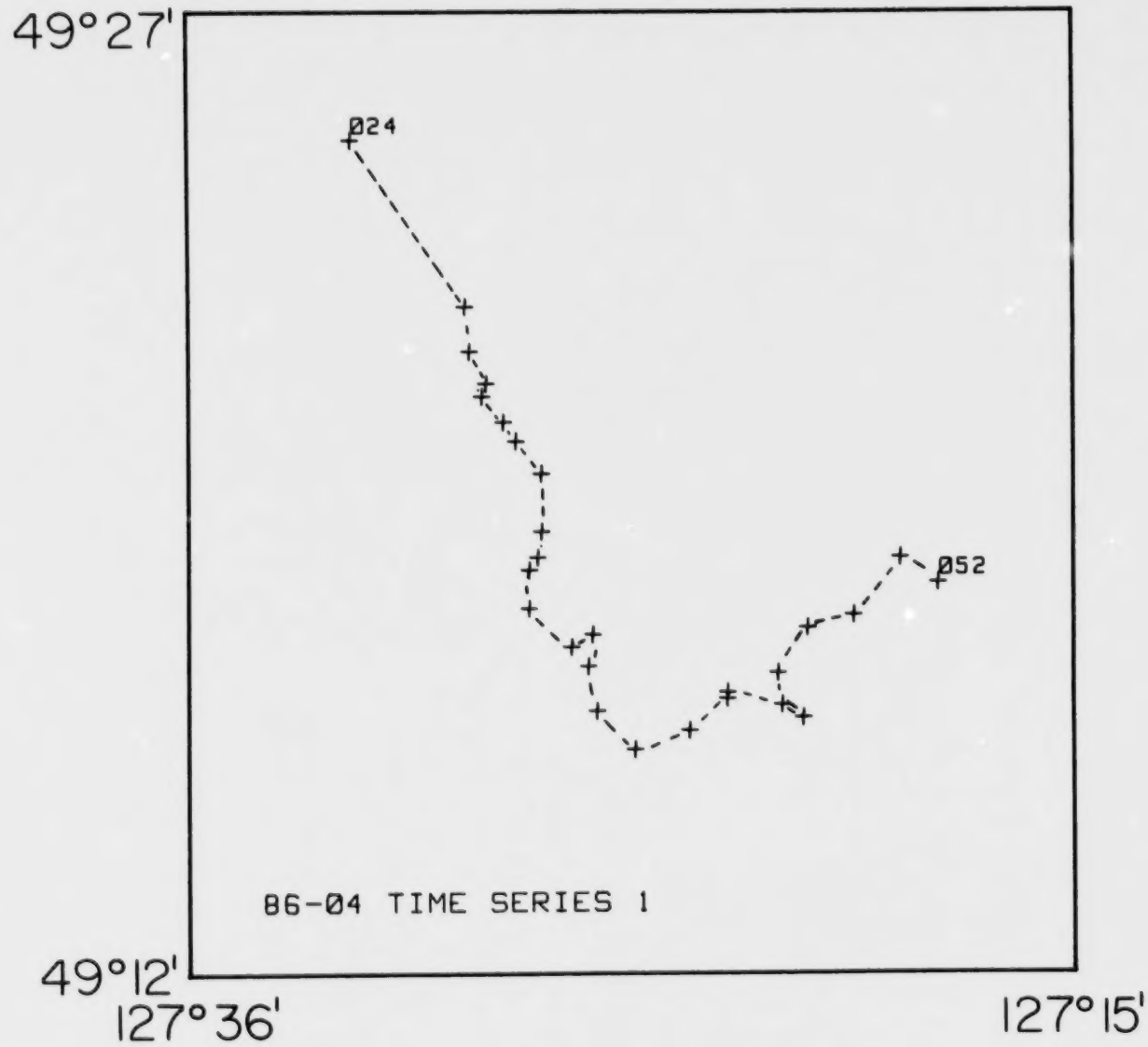
Cruise 86-03: drogued drifter track for time series 3. Time series was interrupted to sample at station 134 (extreme northern station).


48°45'
86-03 TIME SERIES 3
133
159
48°36'
126°24'
126°09'

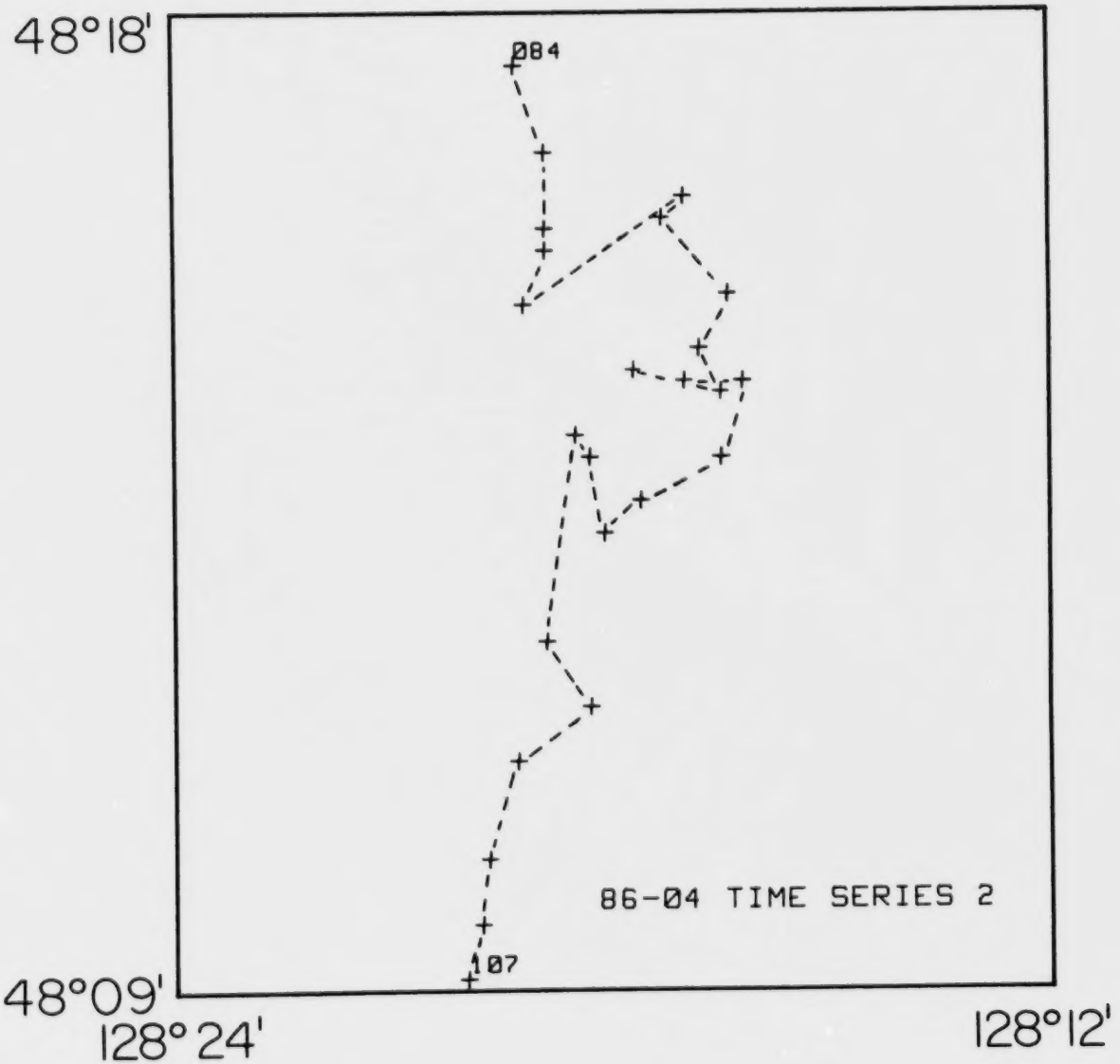
Cruise 86-04: station positions. TS1 and TS2 label station clusters for time series 1 and 2.


51
50
49
48
129
128
127
126
125
TS1 STNS 24-52
TS2 STNS 84-107
86-04 AUG 18 - 29, 1986

Cruise 86-04: drogued drifter track for time series 1.


49°27'
024
052
86-04 TIME SERIES 1
49°12'
127°36'
127°15'

Cruise 86-04: drogued drifter track for time series 2.


48°18'
084
86-04 TIME SERIES 2
107
48°09'
128°24'
128°12'

Cruise 86-03: Station data, fitted and derived parameters, plots.

Cruise: 86-03 Date: 86.06.21
Station: 69-5 Time: 2318 (LAT)
0039 (PDT)
Depth: 21.9 m
Chlor a: 0.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.10 Im = 184.4
a = 0.038 Ik = 82.8

n = 22 r = 0.923 (18 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 69-6 Time: 2318 (LAT)
0039 (PDT)
Depth: 10.8 m
Chlor a: 2.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.98 Im = 512.4
a = 0.022 Ik = 134.5

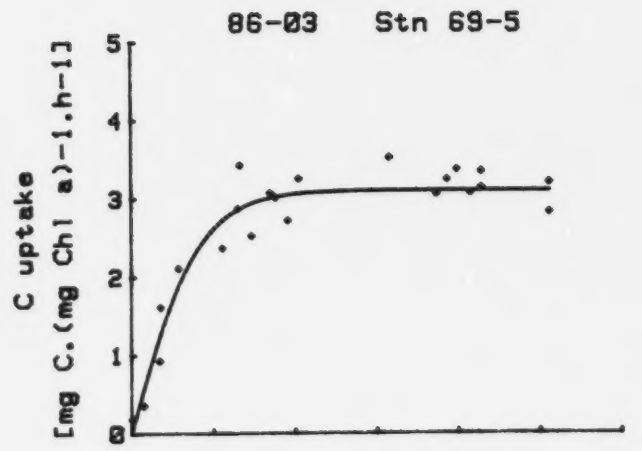
n = 22 r = 0.941 (18 d.f.)

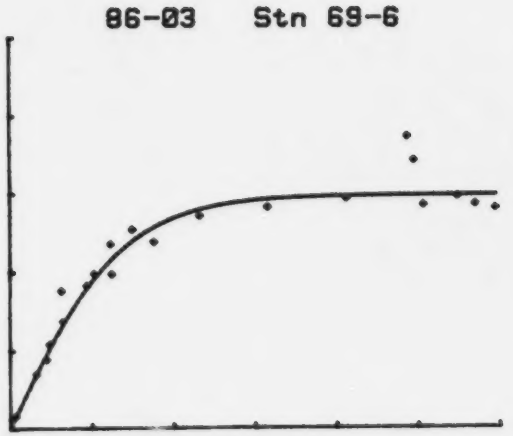
Cruise: 86-03 Date: 86.06.21
Station: 70-B Time: 0111 (LAT)
0232 (PDT)
Depth: 0.0 m
Chlor a: 4.2 mg.m-3

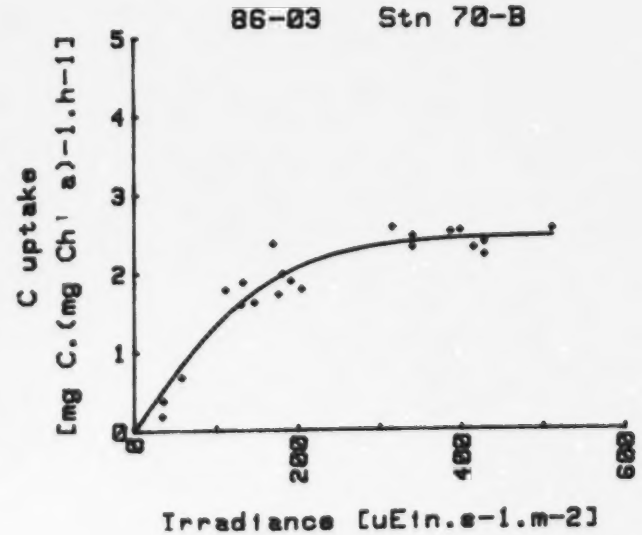
Parameter estimates: Derived parameters:

Pm = 2.48 Im = 537.0
a = 0.015 Ik = 169.5

n = 22 r = 0.933 (18 d.f.)


86-03 Stn 69-5
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-03 Stn 69-6


86-03 Stn 70-B
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.21
Station: 71-1 Time: 0247 (LAT)
0408 (PDT)
Depth: 21.7 m
Chlor a: 0.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.98 Im = 375.0
a = 0.016 Ik = 122.4

n = 21 r = 0.790 (17 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 71-2 Time: 0247 (LAT)
0408 (PDT)
Depth: 9.1 m
Chlor a: 2.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.81 Im = 435.2
a = 0.019 Ik = 149.3

n = 23 r = 0.974 (19 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 72-7 Time: 0453 (LAT)
0614 (PDT)
Depth: 10.6 m
Chlor a: 3.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.76 Im = 417.8
a = 0.019 Ik = 144.2

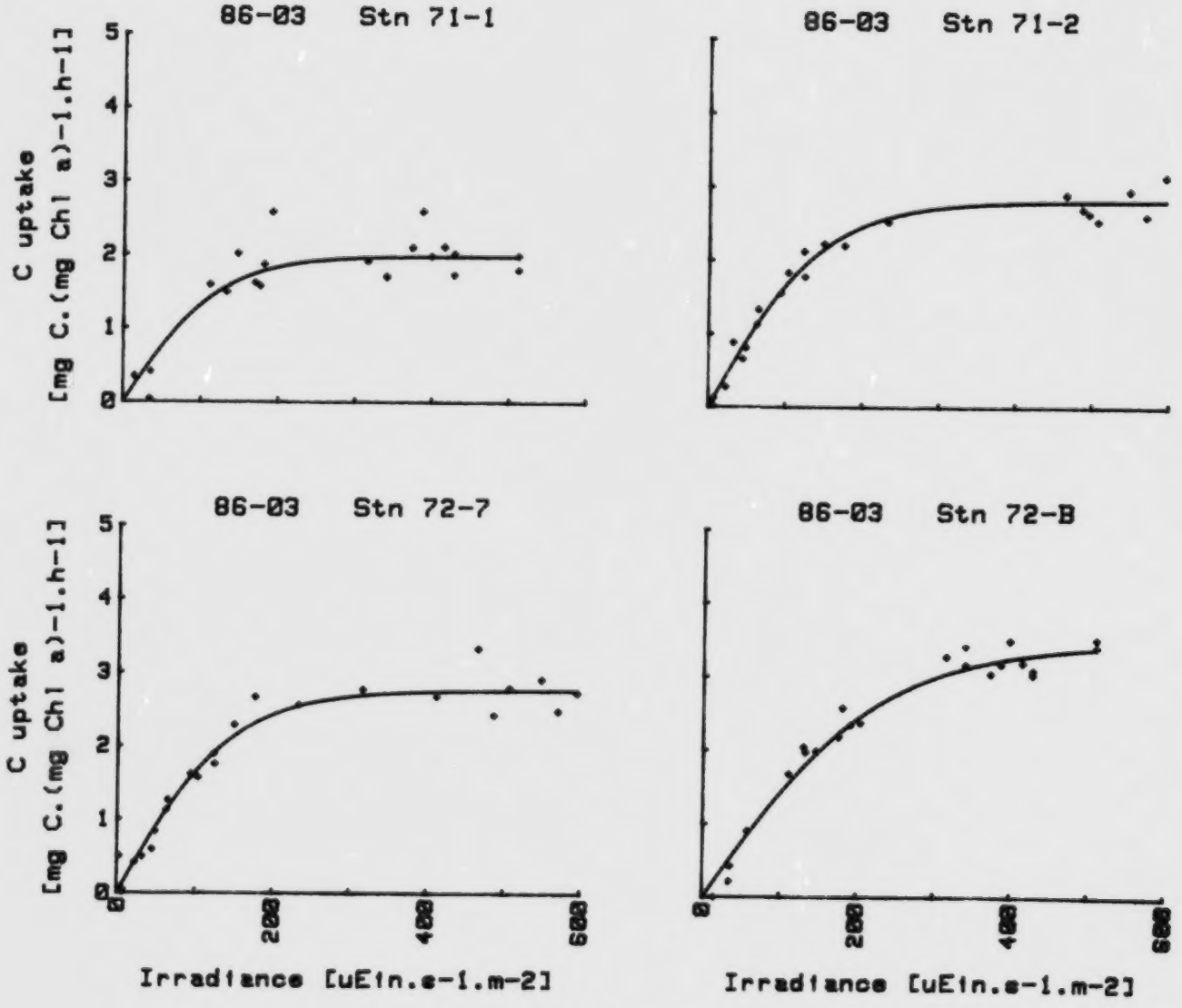
n = 24 r = 0.955 (20 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 72-B Time: 0453 (LAT)
0614 (PDT)
Depth: 0.0 m
Chlor a: 4.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.46 Im = 699.7
a = 0.015 Ik = 224.6

n = 23 r = 0.973 (19 d.f.)


86-03 Stn 71-1
86-03 Stn 71-2
86-03 Stn 72-7
86-03 Stn 72-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.e-1.m-2]
0
1
2
3
4
5
200
400
600

Cruise: 86-03
Station: 73-1

Date: 86-06.21
Time: 0654 (LAT)
0815 (PDT)
Depth: 20.8 m
Chlor a: 5.5 mg.m-3

Parameter estimates:

Pm = 0.85
a = 0.006

n = 22

Derived parameters:

Im = 633.6
Ik = 153.1

r = 0.950 (18 d.f.)

Cruise: 86-03
Station: 73-2

Date: 86.06.21
Time: 0654 (LAT)
0815 (PDT)
Depth: 11.7 m
Chlor a: 4.2 mg.m-3

Parameter estimates:

Pm = 3.60
a = 0.024

n = 25

Derived parameters:

Im = 405.1
Ik = 151.2

r = 0.925 (21 d.f.)

Cruise: 86-03
Station: 74-2

Date: 86.06.21
Time: 0856 (LAT)
1017 (PDT)
Depth: 10.9 m
Chlor a: 4.2 mg.m-3

Parameter estimates:

Pm = 3.46
a = 0.021

n = 23

Derived parameters:

Im = 469.7
Ik = 166.7

r = 0.880 (19 d.f.)

Cruise: 86-03
Station: 74-B

Date: 86.06.21
Time: 0856 (LAT)
1017 (PDT)
Depth: 0.0 m
Chlor a: 5.0 mg.m-3

Parameter estimates:

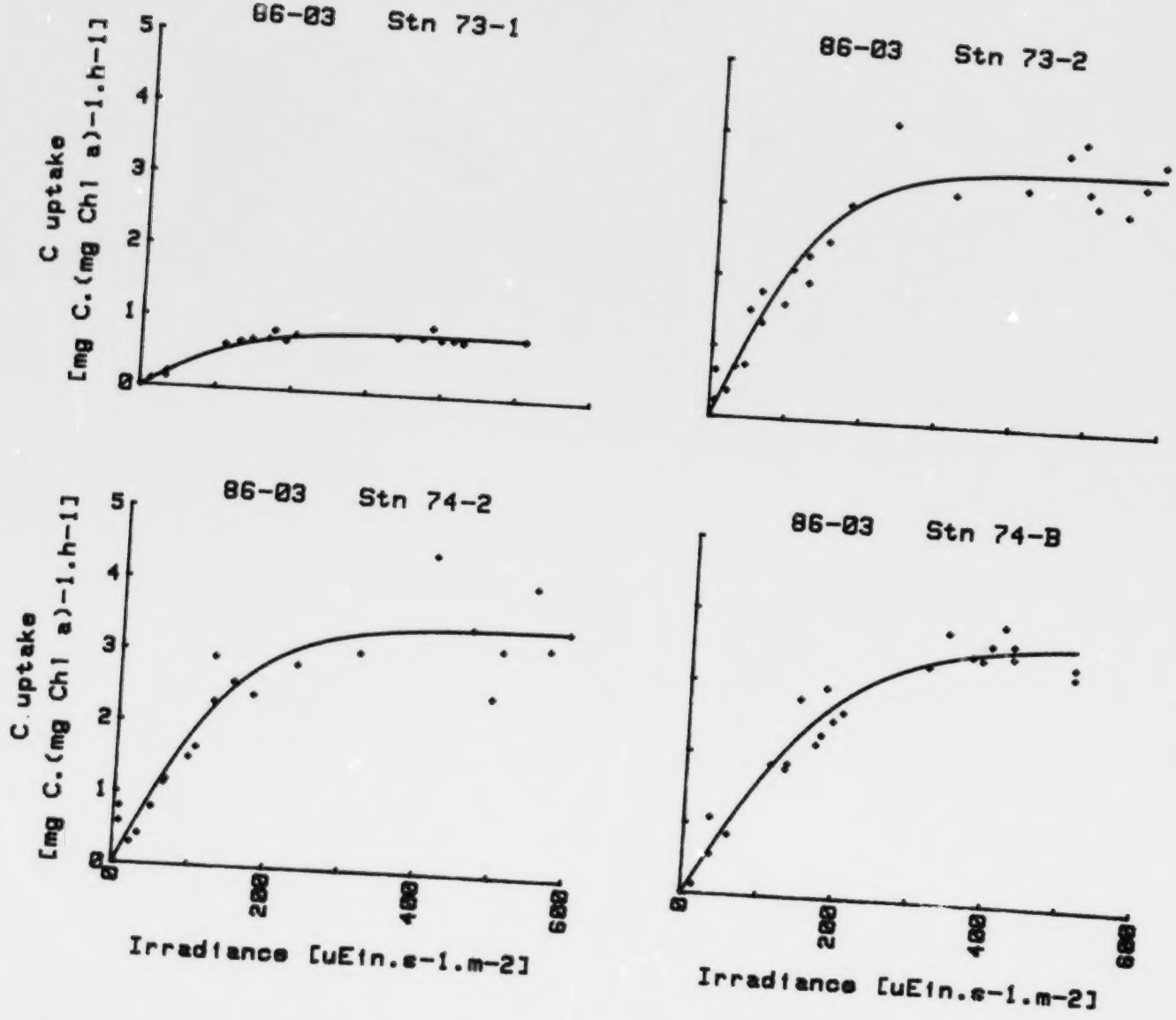
Pm = 3.69
a = 0.018

n = 24

Derived parameters:

Im = 601.6
Ik = 203.7

r = 0.950 (20 d.f.)


86-03 Stn 73-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
86-03 Stn 73-2
86-03 Stn 74-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
200
400
600
Irradiance [uEin.s-1.m-2]
86-03 Stn 74-B
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.21
Station: 75-5 Time: 1054 (LAT)
1215 (PDT)
Depth: 21.0 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.61 Im = 331.2
a = 0.022 Ik = 119.7

n = 24 r = 0.825 (20 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 75-6 Time: 1054 (LAT)
1215 (PDT)
Depth: 11.0 m
Chlor a: 3.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.47 Im = 247.0
a = 0.033 Ik = 105.0

n = 25 r = 0.796 (21 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 76-2 Time: 1250 (LAT)
1411 (PDT)
Depth: 10.4 m
Chlor a: 2.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.96 Im = 666.2
a = 0.027 Ik = 184.3

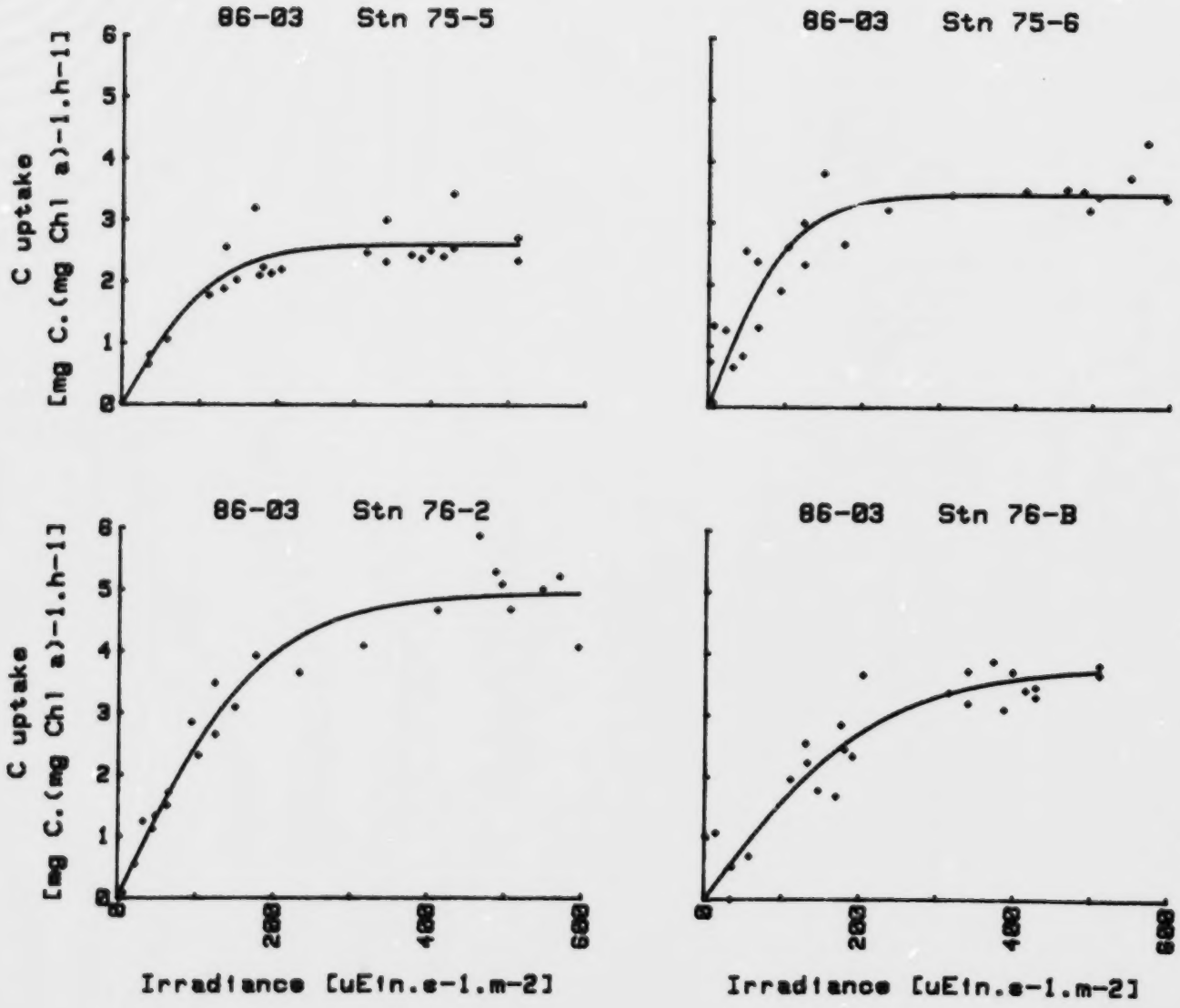
n = 24 r = 0.947 (20 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 76-8 Time: 1250 (LAT)
1411 (PDT)
Depth: 0.0 m
Chlor a: 4.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.80 Im = 889.7
a = 0.017 Ik = 219.3

n = 25 r = 0.839 (21 d.f.)


86-03 Stn 75-5
86-03 Stn 75-6
86-03 Stn 76-2
86-03 Stn 76-B
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.e-1.m-2]
0
1
2
3
4
5
6
200
400
600

Cruise: 86-03 Date: 86.06.21
Station: 77-1 Time: 1454 (LAT)
1615 (PDT)
Depth: 20.6 m
Chlor a: 1.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.21 Im = 416.9
a = 0.021 Ik = 107.3

n = 17 r = 0.868 (13 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 78-6 Time: 1648 (LAT)
1809 (PDT)
Depth: 10.0 m
Chlor a: 3.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.08 Im = 560.4
a = 0.021 Ik = 145.4

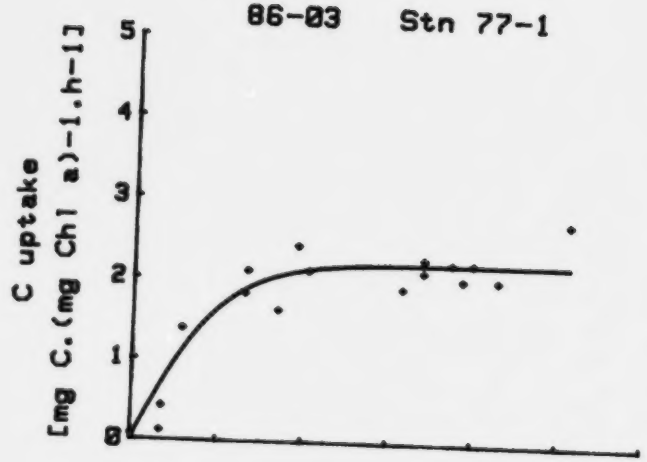
n = 22 r = 0.849 (18 d.f.)

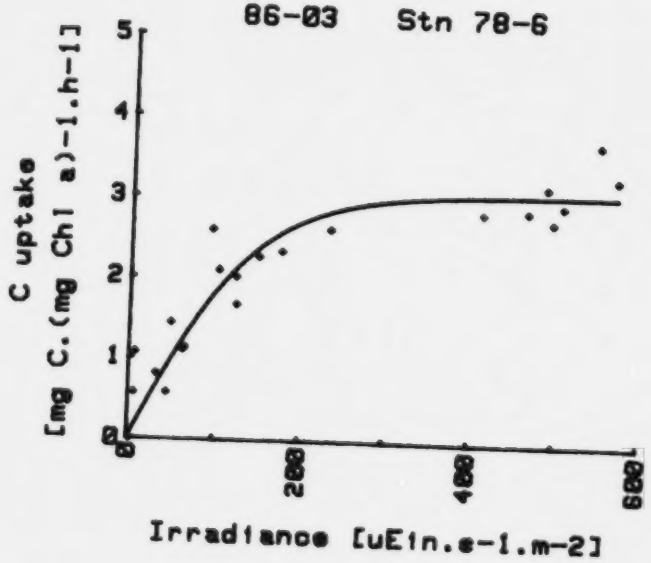
Cruise: 86-03 Date: 86.06.21
Station: 78-B Time: 1648 (LAT)
1809 (PDT)
Depth: 0.0 m
Chlor a: 5.2 mg.m-3

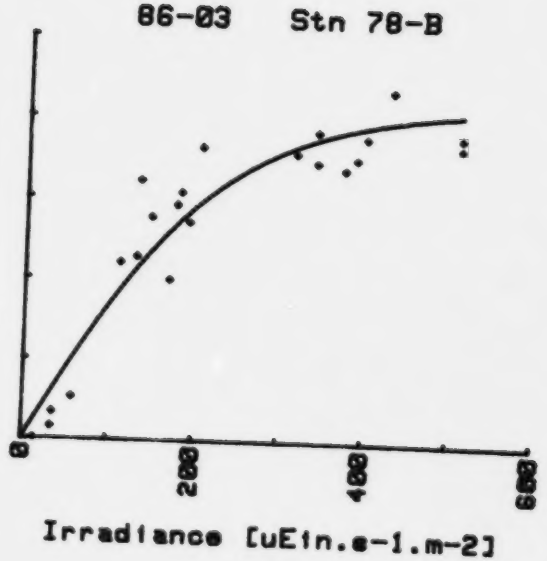
Parameter estimates: Derived parameters:

Pm = 4.16 Im = 957.5
a = 0.018 Ik = 236.8

n = 22 r = 0.800 (18 d.f.)


86-03 Stn 77-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-03 Stn 78-6
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
200
400
600
Irradiance [uEin.e-1.m-2]


86-03 Stn 78-B
0
200
400
600
Irradiance [uEin.e-1.m-2]

Cruise: 86-03 Date: 86.06.21
Station: 79B-1 Time: 1903 (LAT)
2024 (PDT)
Depth: 19.6 m
Chlor a: 0.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.78 Im = 509.7
a = 0.021 Ik = 132.0

n = 21 r = 0.884 (17 d.f.)

Cruise: 86.03 Date: 86.06.21
Station: 79B-2 Time: 1903 (LAT)
2024 (PDT)
Depth: 11.3 m
Chlor a: 3.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.70 Im = 715.3
a = 0.016 Ik = 172.1

n = 23 r = 0.963 (19 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 80-3 Time: 2107 (LAT)
2228 (PDT)
Depth: 10.0 m
Chlor a: 3.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.81 Im = 569.1
a = 0.014 Ik = 132.6

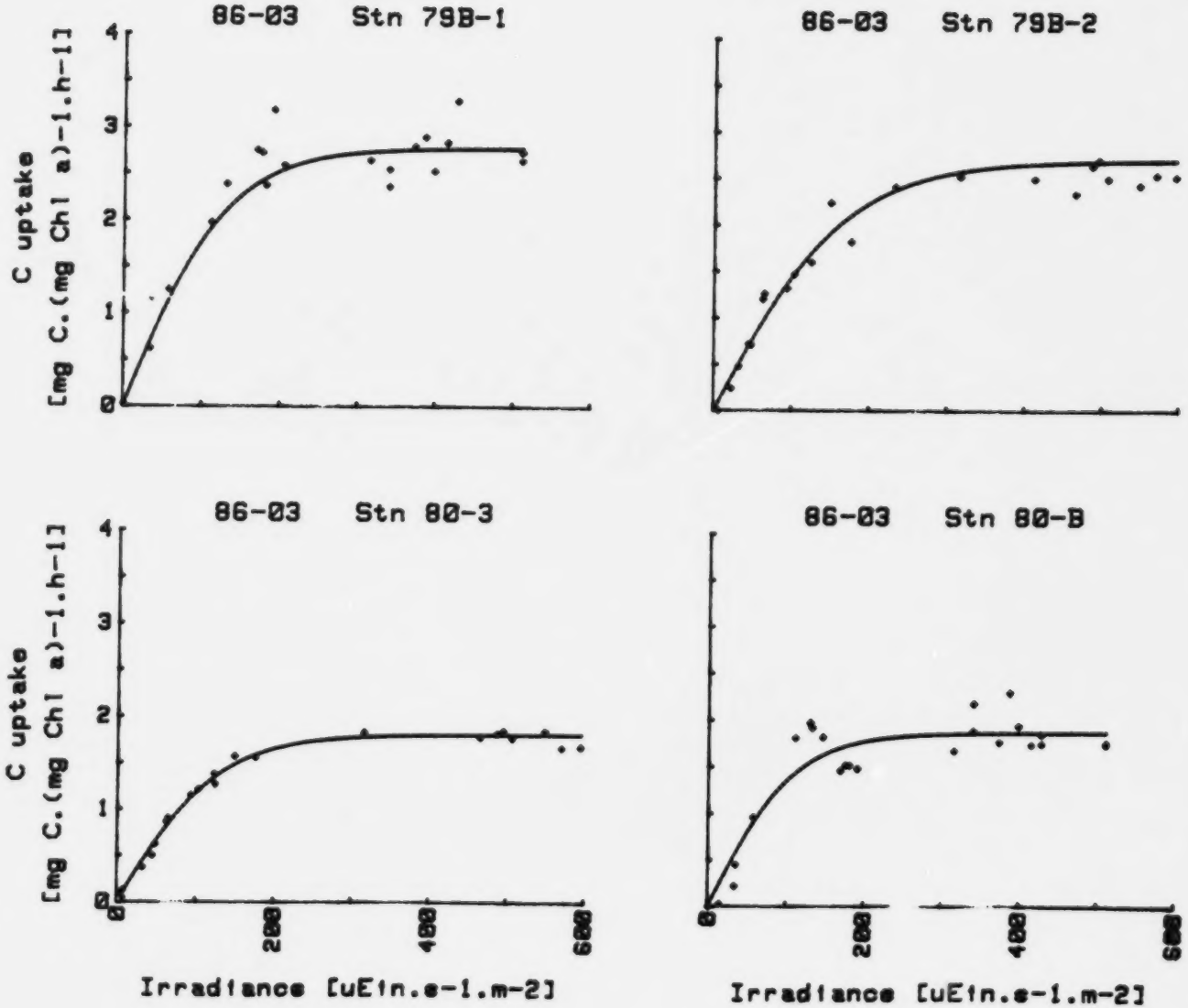
n = 22 r = 0.989 (18 d.f.)

Cruise: 86-03 Date: 86.06.21
Station: 80-B Time: 2107 (LAT)
2228 (PDT)
Depth: 0.0 m
Chlor a: 5.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.87 Im = 433.9
a = 0.017 Ik = 107.1

n = 24 r = 0.867 (20 d.f.)


86-03 Stn 79B-1
86-03 Stn 79B-2
86-03 Stn 80-3
86-03 Stn 80-B
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.e-1.m-2]
0
1
2
3
4
200
400
600

Cruise: 86-03 Date: 86.06.22
Station: 81-6 Time: 2302 (LAT)
0023 (PDT)
Depth: 21.2 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.59 Im = 447.6
a = 0.015 Ik = 106.4

n = 19 r = 0.935 (15 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 81-7 Time: 2302 (LAT)
0023 (PDT)
Depth: 11.8 m
Chlor a: 4.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.64 Im = 536.3
a = 0.013 Ik = 124.0

n = 23 r = 0.902 (19 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 82-2 Time: 0054 (LAT)
0215 (PDT)
Depth: 10.0 m
Chlor a: 3.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.43 Im = 886.7
a = 0.012 Ik = 200.8

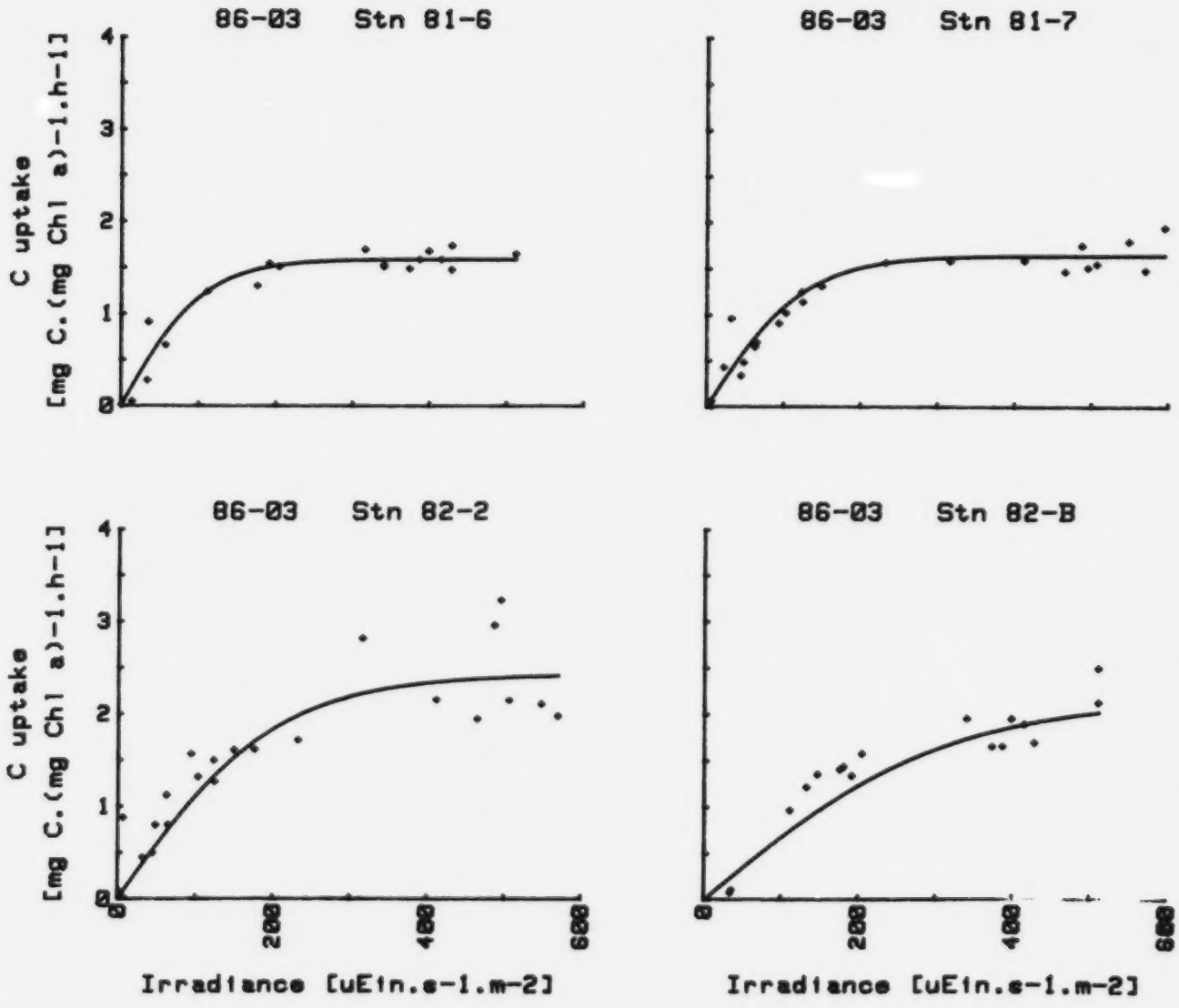
n = 23 r = 0.797 (19 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 82-B Time: 0054 (LAT)
0215 (PDT)
Depth: 0.0 m
Chlor a: 3.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.18 Im = 1442.7
a = 0.007 Ik = 294.1

n = 17 r = 0.869 (13 d.f.)


86-03 Stn 81-6
86-03 Stn 81-7
86-03 Stn 82-2
86-03 Stn 82-B
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.e-1.m-2]
0
1
2
3
4
200
400
600

Cruise: 86-03 Date: 86.06.22
Station: 83-1 Time: 0302 (LAT)
0423 (PDT)
Depth: 20.0 m
Chlor a: 1.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.97 Im = 795.8
a = 0.016 Ik = 191.2

n = 23 r = 0.826 (19 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 83-2 Time: 0302 (LAT)
0423 (PDT)
Depth: 10.0 m
Chlor a: 3.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.30 Im = 788.8
a = 0.013 Ik = 180.7

n = 25 r = 0.971 (21 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 84-4 Time: 0502 (LAT)
0623 (PDT)
Depth: 10.0 m
Chlor a: 2.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.85 Im = 577.3
a = 0.019 Ik = 146.6

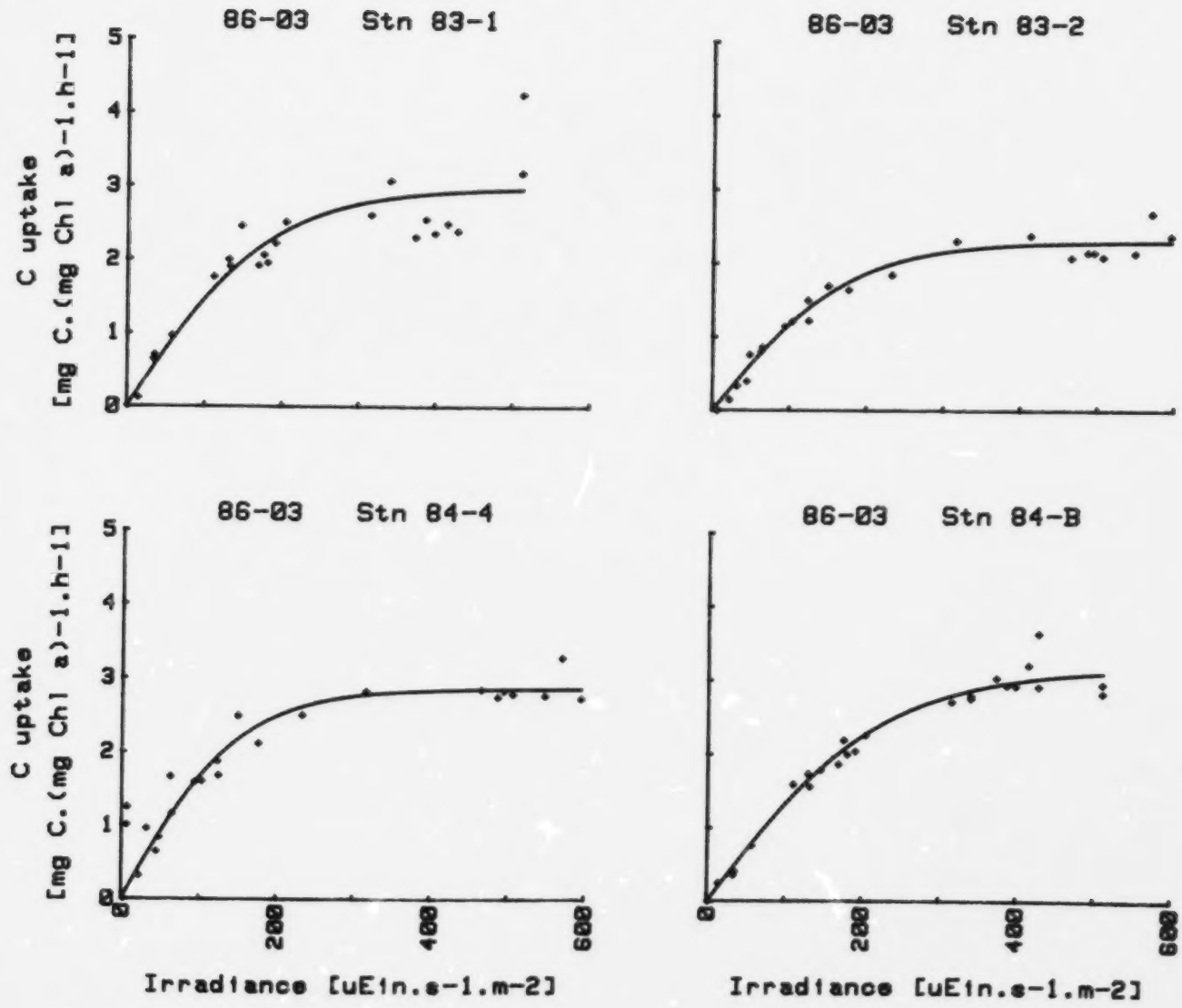
n = 24 r = 0.843 (20 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 84-B Time: 0502 (LAT)
0623 (PDT)
Depth: 0.0 m
Chlor a: 4.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.17 Im = 971.2
a = 0.014 Ik = 227.4

n = 25 r = 0.972 (21 d.f.)


86-03 Stn 83-1
86-03 Stn 83-2
86-03 Stn 84-4
86-03 Stn 84-B
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
200
400
600

Cruise: 86-03 Date: 86.06.22
Station: 85-1 Time: 0642 (LAT)
0803 (PDT)
Depth: 20.0 m
Chlor a: 2.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.05 Im = 656.6
a = 0.019 Ik = 164.7

n = 25 r = 0.854 (21 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 85-2 Time: 0642 (LAT)
0803 (PDT)
Depth: 10.0 m
Chlor a: 3.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.14 Im = 722.9
a = 0.018 Ik = 178.8

n = 24 r = 0.980 (20 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 86-2 Time: 0844 (LAT)
1005 (PDT)
Depth: 10.0 m
Chlor a: 4.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.97 Im = 886.4
a = 0.014 Ik = 208.5

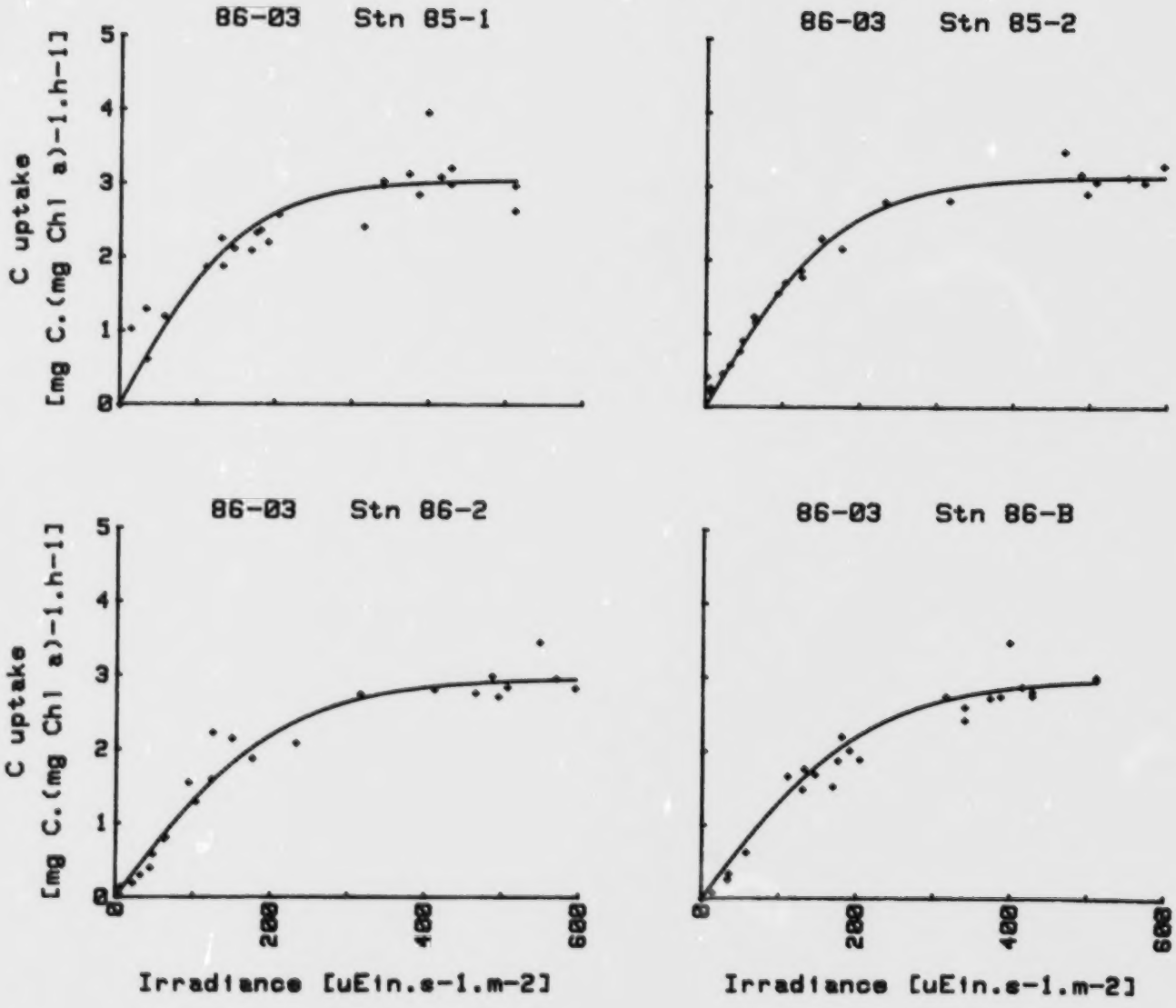
n = 25 r = 0.960 (21 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 86-B Time: 0844 (LAT)
1005 (PDT)
Depth: 0.0 m
Chlor a: 4.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.00 Im = 957.2
a = 0.014 Ik = 222.4

n = 25 r = 0.955 (21 d.f.)


86-03 Stn 85-1
86-03 Stn 85-2
86-03 Stn 86-2
86-03 Stn 86-B
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.22
Station: 87-6 Time: 1152 (LAT)
1313 (PDT)
Depth: 10.0 m
Chlor a: 1.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.85 Im = 331.2
a = 0.038 Ik = 101.3

n = 21 r = 0.721 (17 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 88-4 Time: 1253 (LAT)
1414 (PDT)
Depth: 10.0 m
Chlor a: 2.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.42 Im = 607.0
a = 0.022 Ik = 158.3

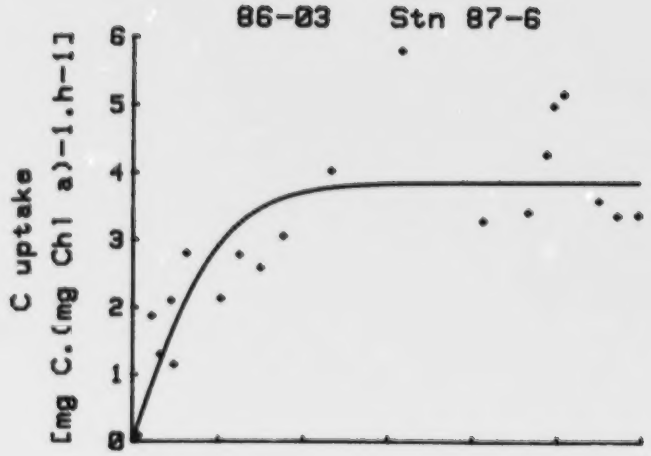
n = 24 r = 0.921 (20 d.f.)

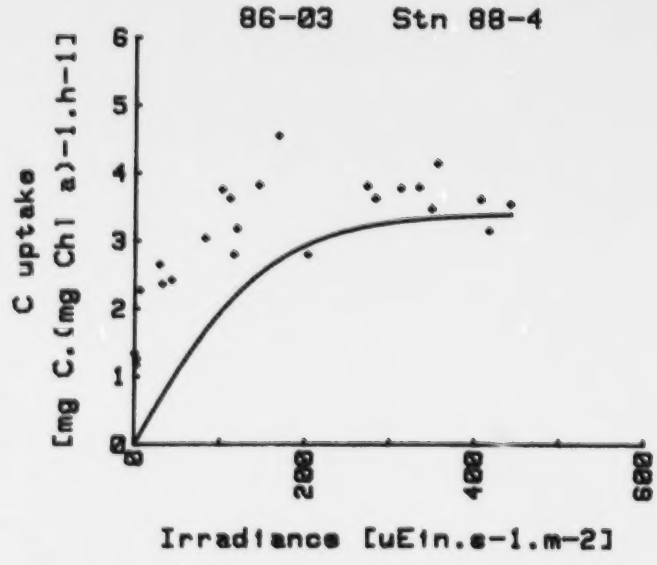
Cruise: 86-03 Date: 86.06.22
Station: 88-B Time: 1253 (LAT)
1414 (PDT)
Depth: 0.0 m
Chlor a: 5.8 mg.m-3

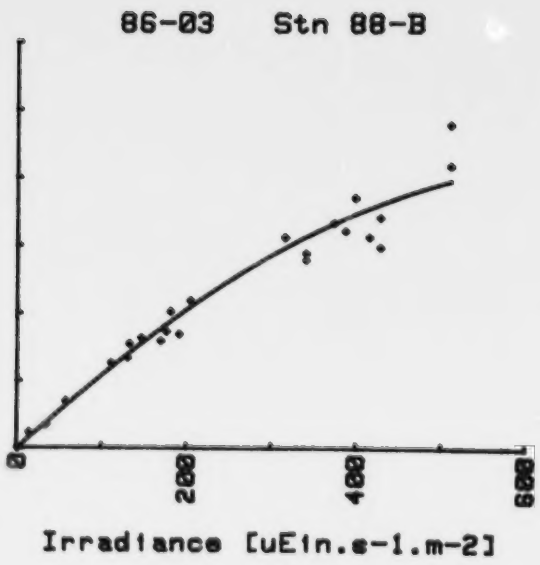
Parameter estimates: Derived parameters:

Pm = 4.79 Im = 1879.4
a = 0.011 Ik = 420.1

n = 25 r = 0.947 (21 d.f.)


86-03 Stn 87-6
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6


86-03 Stn 88-4
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 88-B
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.22
Station: 89-3 Time: 1529 (LAT)
1650 (PDT)
Depth: 20.0 m
Chlor a: 0.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.74 Im = 395.9
a = 0.045 Ik = 127.6

n = 23 r = 0.748 (19 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 89-4 Time: 1529 (LAT)
1650 (PDT)
Depth: 10.0 m
Chlor a: 2.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.45 Im = 577.8
a = 0.023 Ik = 152.5

n = 25 r = 0.915 (21 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 90-6 Time: 1748 (LAT)
1909 (PDT)
Depth: 10.0 m
Chlor a: 4.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.85 Im = 458.7
a = 0.023 Ik = 122.1

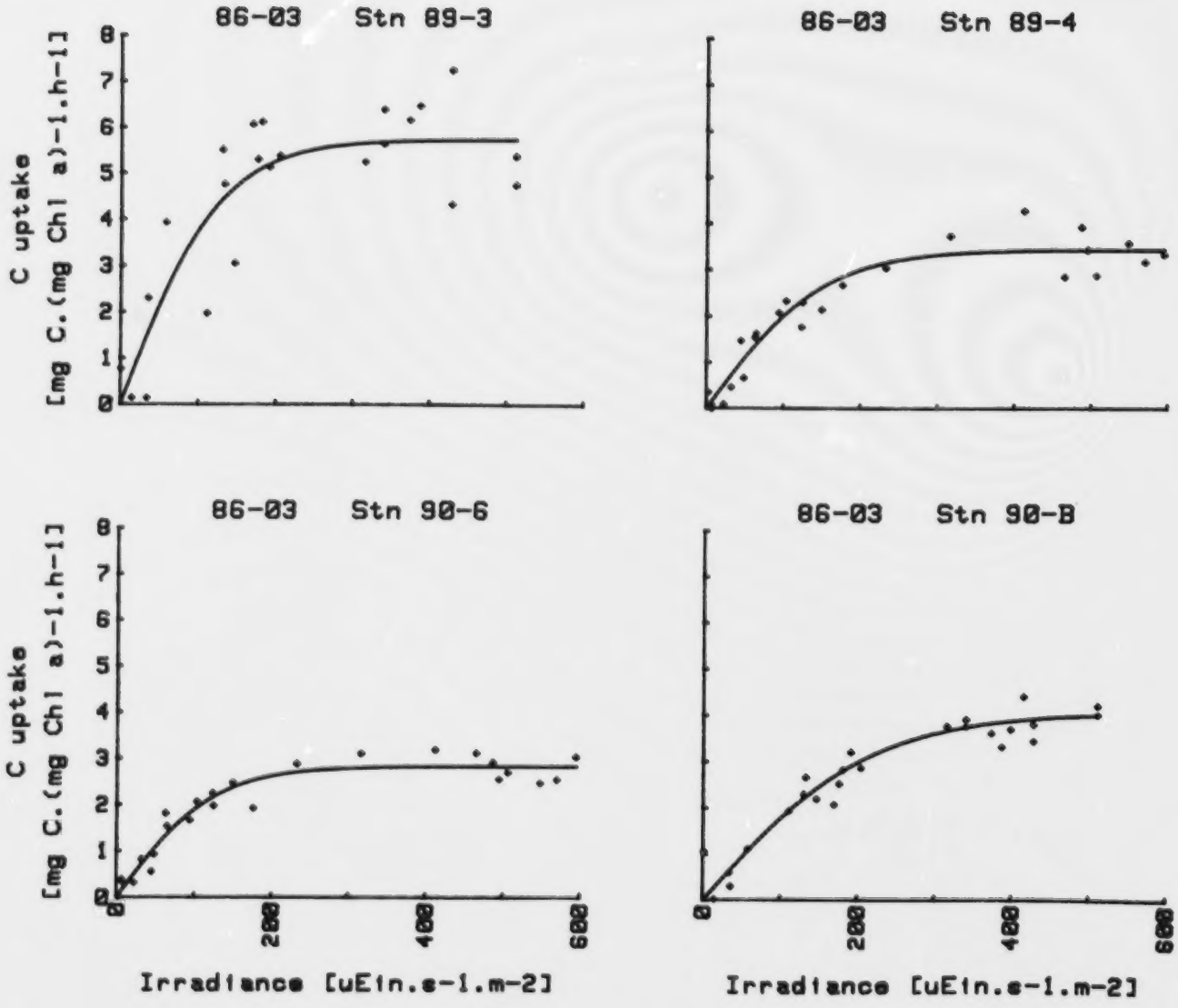
n = 25 r = 0.928 (21 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 90-B Time: 1748 (LAT)
1909 (PDT)
Depth: 0.0 m
Chlor a: 5.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.09 Im = 880.7
a = 0.019 Ik = 220.8

n = 25 r = 0.922 (21 d.f.)


86-03 Stn 89-3
86-03 Stn 89-4
86-03 Stn 90-6
86-03 Stn 90-B
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
6
7
8
200
400
600

Cruise: 86-03 Date: 86.06.22
Station: 91-1 Time: 1916 (LAT)
2037 (PDT)
Depth: 20.0 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.37 Im = 478.1
a = 0.020 Ik = 121.5

n = 21 r = 0.950 (17 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 91-2 Time: 1916 (LAT)
2037 (PDT)
Depth: 10.0 m
Chlor a: 4.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.17 Im = 710.0
a = 0.013 Ik = 164.1

n = 25 r = 0.897 (21 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 92-7 Time: 2213 (LAT)
2334 (PDT)
Depth: 10.9 m
Chlor a: 5.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.76 Im = 494.8
a = 0.015 Ik = 117.8

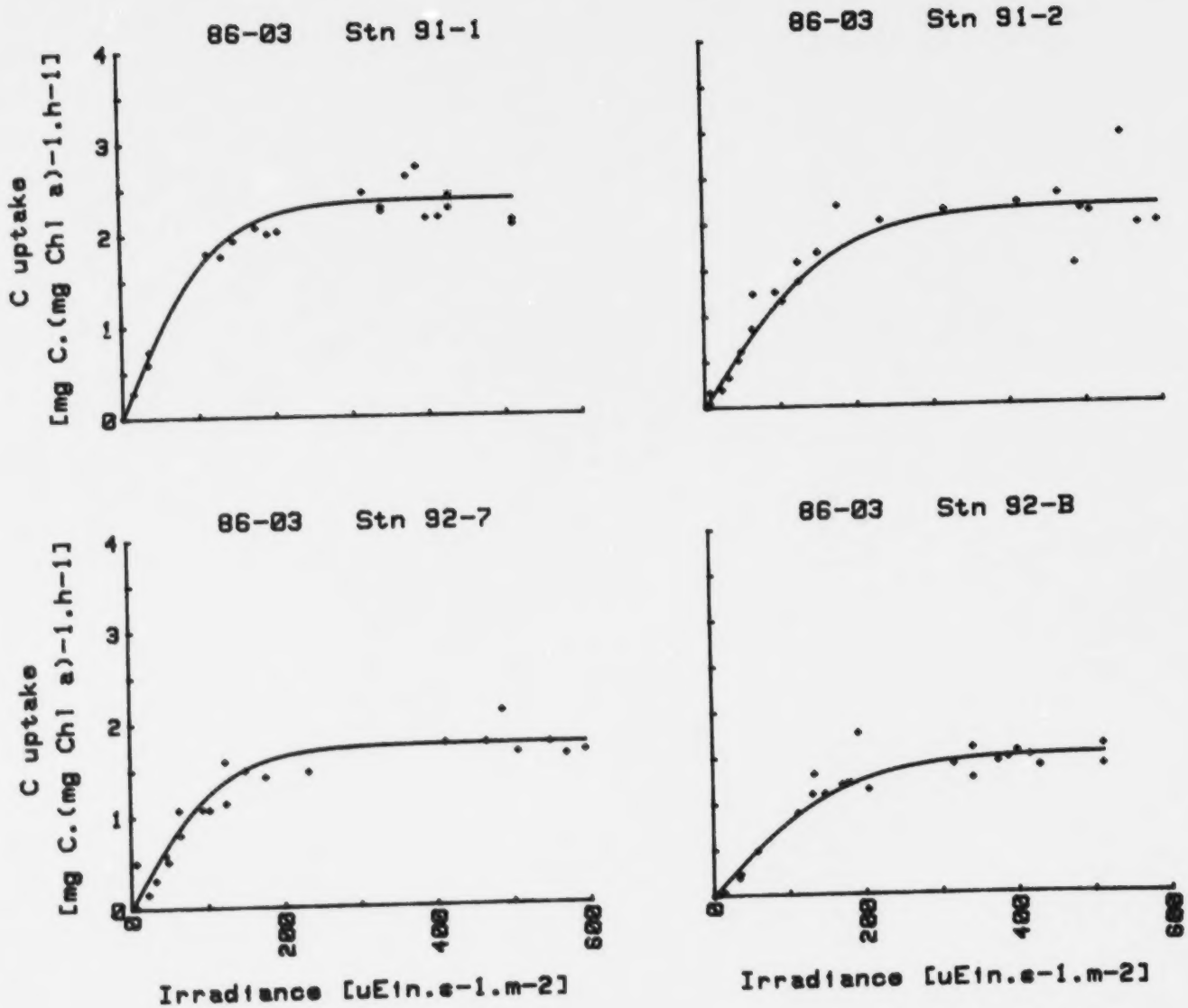
n = 23 r = 0.918 (19 d.f.)

Cruise: 86-03 Date: 86.06.22
Station: 92-B Time: 2213 (LAT)
2334 (PDT)
Depth: 0.0 m
Chlor a: 8.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.53 Im = 850.4
a = 0.009 Ik = 178.7

n = 25 r = 0.898 (21 d.f.)


86-03 Stn 91-1
86-03 Stn 91-2
86-03 Stn 92-7
86-03 Stn 92-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.e-1.m-2]
0
1
2
3
4
200
400
600

Cruise: 86-03 Date: 86.06.23
Station: 99-6 Time: 1141 (LAT)
1303 (PDT)
Depth: 20.6 m
Chlor a: 1.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.00 Im = 594.3
a = 0.020 Ik = 151.6

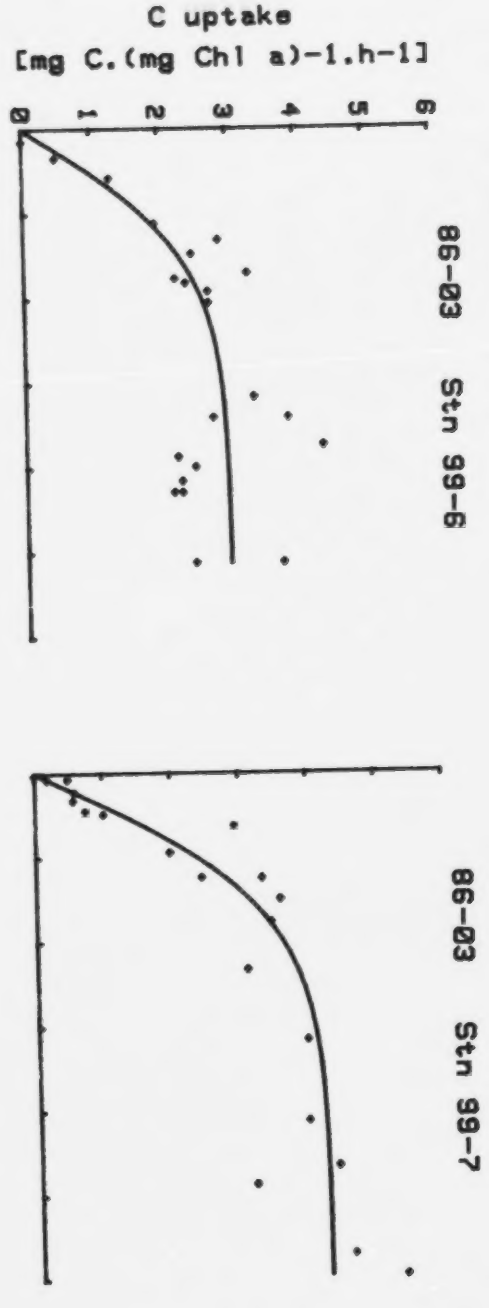
n = 22 r = 0.601 (18 d.f.)

Cruise: 86-03 Date: 86.06.23
Station: 99-7 Time: 1141 (LAT)
1303 (PDT)
Depth: 10.0 m
Chlor a: 1.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.27 Im = 572.9
a = 0.027 Ik = 158.5

n = 20 r = 0.880 (16 d.f.)


C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
Stn 99-5 86-03
Stn 99-7 86-03

Cruise: 86-03 Date: 86.06.26
Station: 104-7 Time: 0501 (LAT)
0624 (PDT)
Depth: 13.3 m
Chlor a: 6.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.94 Im = 697.1
a = 0.022 Ik = 181.9

n = 25 r = 0.958 (21 d.f.)

Cruise: 86-03 Date: 86.06.26
Station: 104-B Time: 0501 (LAT)
0624 (PDT)
Depth: 0.0 m
Chlor a: 5.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.79 Im = 556.7
a = 0.020 Ik = 141.7

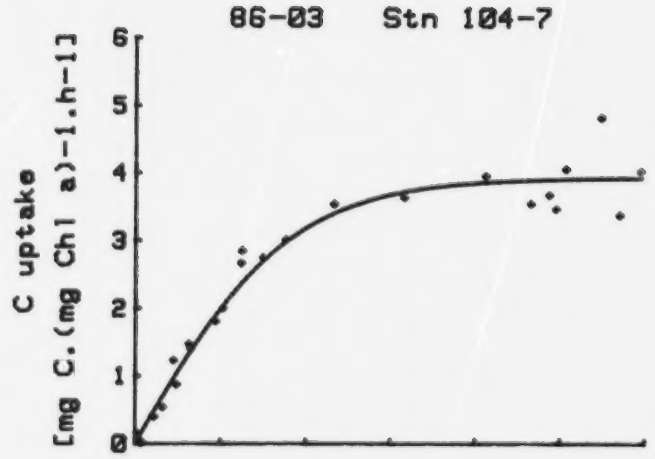
n = 24 r = 0.745 (20 d.f.)

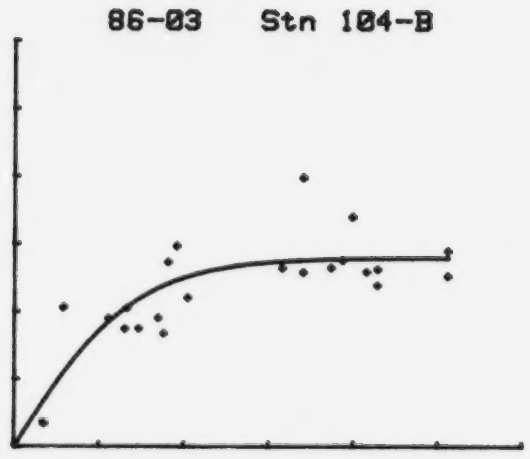
Cruise: 86-03 Date: 86.06.26
Station: 105-2 Time: 0649 (LAT)
0812 (PDT)
Depth: 10.8 m
Chlor a: 10.3 mg.m-3

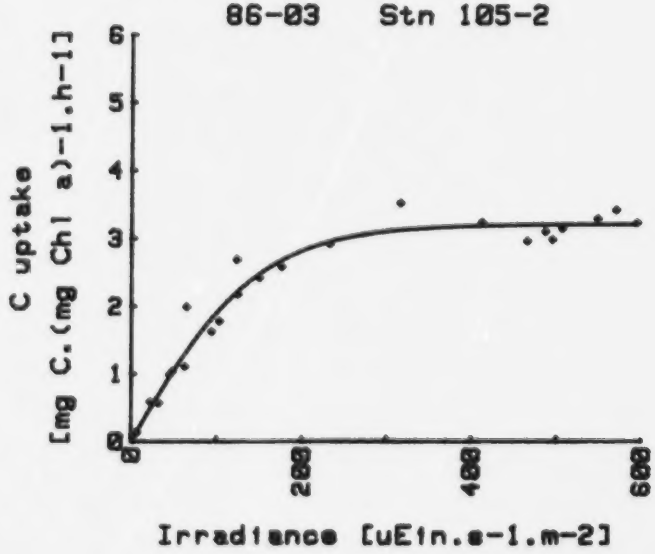
Parameter estimates: Derived parameters:

Pm = 3.21 Im = 545.7
a = 0.022 Ik = 143.6

n = 25 r = 0.965 (21 d.f.)


86-03 Stn 104-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6


86-03 Stn 104-8


86-03 Stn 105-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.26
Station: 106-3 Time: 0853 (LAT)
1016 (PDT)
Depth: 10.9 m
Chlor a: 10.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.24 Im = 603.5
a = 0.021 Ik = 155.8

n = 25 r = 0.928 (21 d.f.)

Cruise: 86-03 Date: 86.06.26
Station: 107-7 Time: 1053 (LAT)
1216 (PDT)
Depth: 21.8 m
Chlor a: 10.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.53 Im = 691.5
a = 0.024 Ik = 186.2

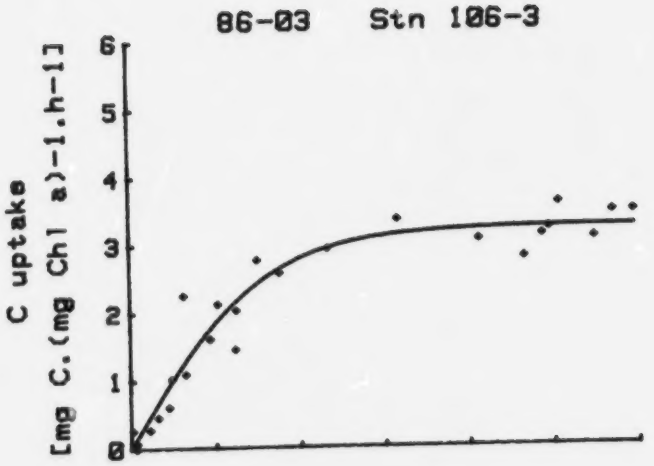
n = 25 r = 0.964 (21 d.f.)

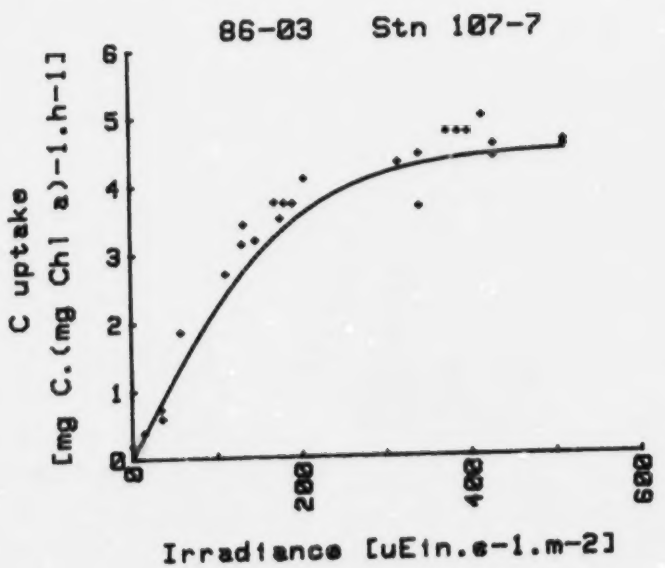
Cruise: 86-03 Date: 86.06.26
Station: 107-8 Time: 1053 (LAT)
1216 (PDT)
Depth: 12.5 m
Chlor a: 12.7 mg.m-3

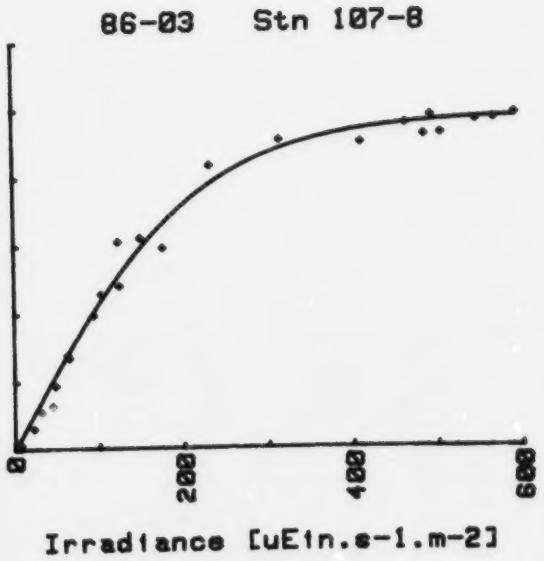
Parameter estimates: Derived parameters:

Pm = 4.90 Im = 816.2
a = 0.023 Ik = 215.7

n = 25 r = 0.988 (21 d.f.)


86-03 Stn 106-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6


86-03 Stn 107-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 107-8
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.26
Station: 109-3 Time: 1449 (LAT)
1612 (PDT)
Depth: 11.0 m
Chlor a: 11.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.76 Im = 585.1
a = 0.024 Ik = 156.8

n = 25 r = 0.976 (21 d.f.)

Cruise: 86-03 Date: 86.06.26
Station: 110-8 Time: 1644 (LAT)
1807 (PDT)
Depth: 9.9 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.27 Im = 746.3
a = 0.018 Ik = 184.9

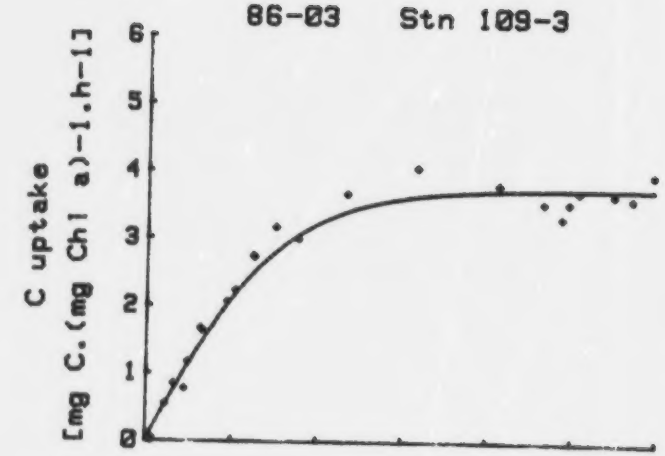
n = 21 r = 0.830 (17 d.f.)

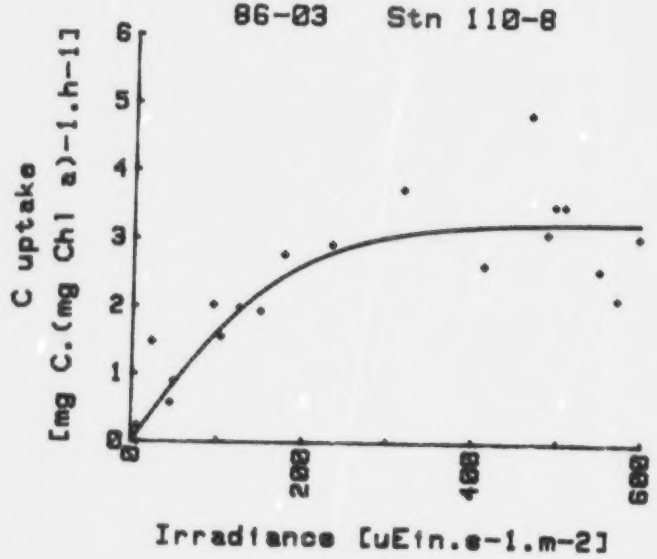
Cruise: 86-03 Date: 86.06.26
Station: 110-B Time: 1644 (LAT)
1807 (PDT)
Depth: 0.0 m
Chlor a: 13.2 mg.m-3

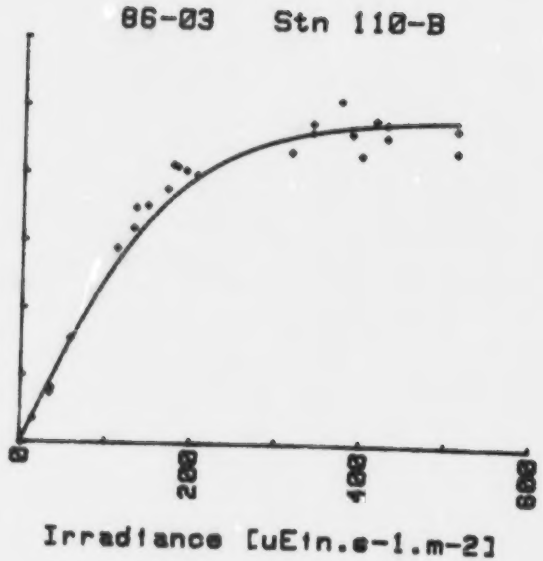
Parameter estimates: Derived parameters:

Pm = 4.84 Im = 663.3
a = 0.027 Ik = 182.7

n = 25 r = 0.968 (21 d.f.)


86-03 Stn 109-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6


86-03 Stn 110-8
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
0
200
400
600
Irradiance [uEin.e-1.m-2]


86-03 Stn 110-B
0
200
400
600
Irradiance [uEin.e-1.m-2]

Cruise: 86-03 Date: 86.06.26
Station: 111-2 Time: 1851 (LAT)
2014 (PDT)
Depth: 23.8 m
Chlor a: 9.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.52 Im = 443.0
a = 0.034 Ik = 132.0

n = 25 r = 0.942 (21 d.f.)

Cruise: 86-03 Date: 86.06.26
Station: 111-3 Time: 1851 (LAT)
2014 (PDT)
Depth: 13.8 m
Chlor a: 15.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.08 Im = 583.0
a = 0.021 Ik = 150.0

n = 25 r = 0.984 (21 d.f.)

Cruise: 86-03 Date: 86.06.26
Station: 112-1 Time: 2052 (LAT)
2214 (PDT)
Depth: 23.7 m
Chlor a: 2.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 12.71 Im = 289.0
a = 0.101 Ik = 126.0

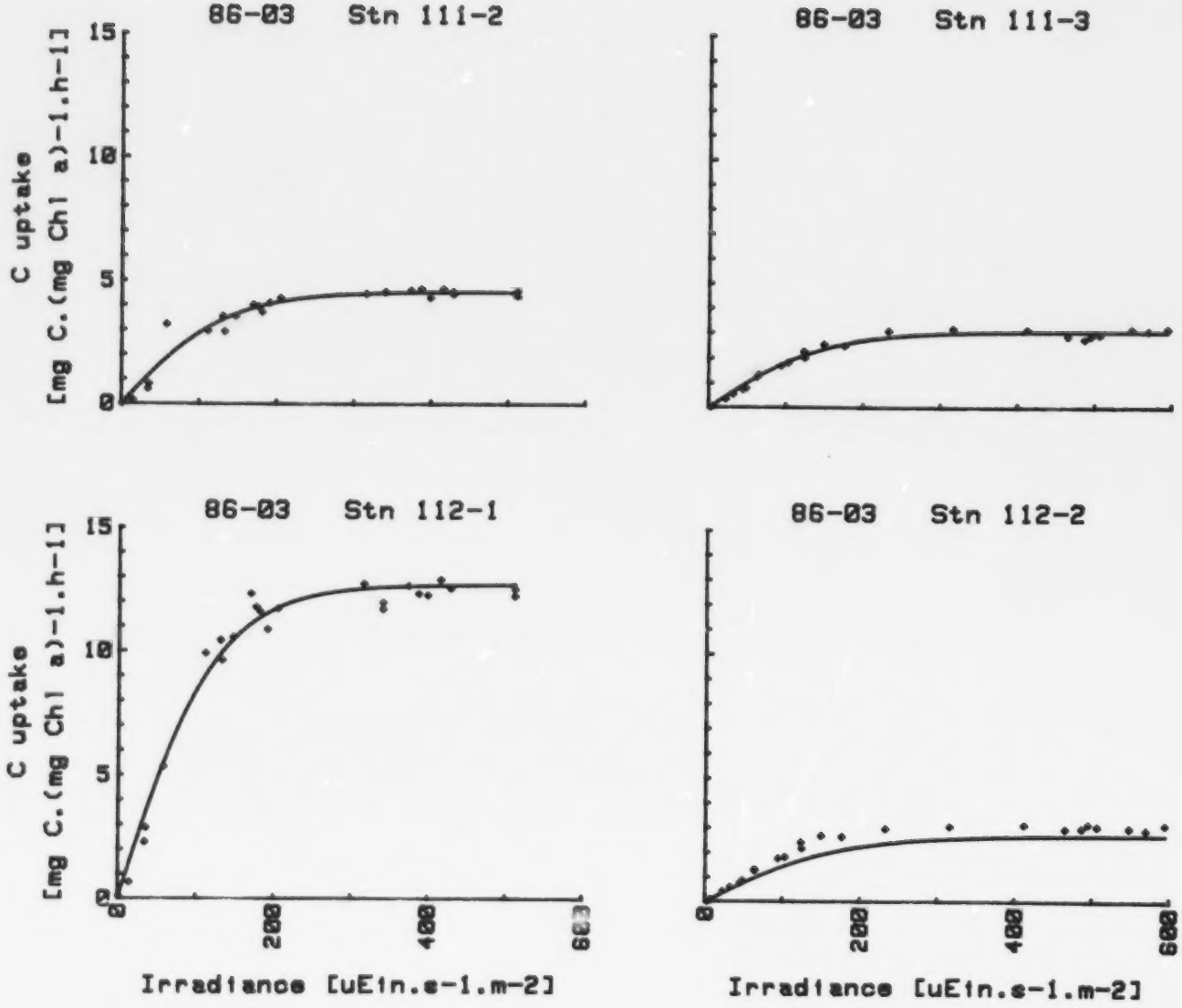
n = 25 r = 0.981 (21 d.f.)

Cruise: 86-03 Date: 86.06.26
Station: 112-2 Time: 2052 (LAT)
2214 (PDT)
Depth: 11.8 m
Chlor a: 10.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.68 Im = 719.0
a = 0.016 Ik = 173.0

n = 25 r = 0.947 (21 d.f.)


86-03 Stn 111-2
86-03 Stn 111-3
86-03 Stn 112-1
86-03 Stn 112-2
C uptake
[mg C.(mg Chl a)-1.h-1]
15
10
5
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.27
Station: 113-6 Time: 2254 (LAT)
0017 (PDT)
Depth: 7.9 m
Chlor a: 12.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.94 Im = 711.0
a = 0.007 Ik = 142.0

n = 25 r = 0.872 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 114-2 Time: 0046 (LAT)
0209 (PDT)
Depth: 10.4 m
Chlor a: 14.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.00 Im = 526.3
a = 0.022 Ik = 137.5

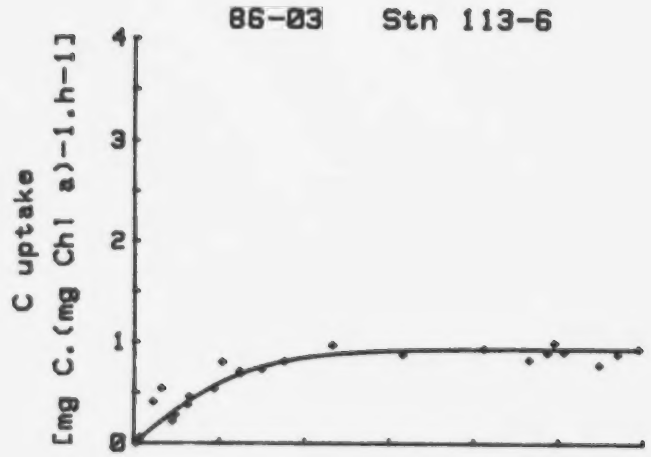
n = 25 r = 0.960 (21 d.f.)

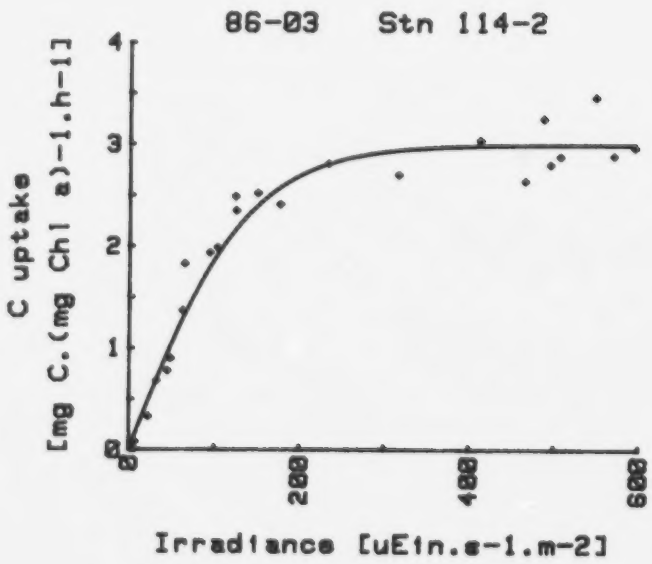
Cruise: 86-03 Date: 86.06.27
Station: 114-B Time: 0046 (LAT)
0209 (PDT)
Depth: 0.0 m
Chlor a: 14.3 mg.m-3

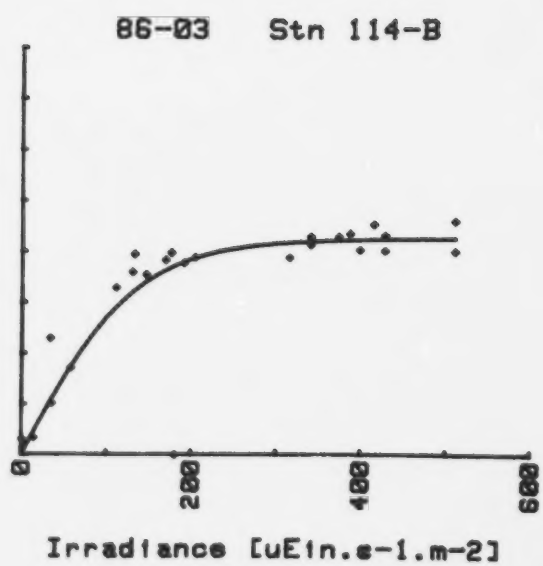
Parameter estimates: Derived parameters:

Pm = 2.13 Im = 563.9
a = 0.016 Ik = 135.7

n = 25 r = 0.640 (21 d.f.)


86-03 Stn 113-6
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4


86-03 Stn 114-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.e-1.m-2]


86-03 Stn 114-B
0
200
400
600
Irradiance [uEin.e-1.m-2]

Cruise: 86-03 Date: 86.06.27
Station: 115-2 Time: 0259 (LAT)
0422 (PDT)
Depth: 19.5 m
Chlor a: 3.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.59 Im = 625.7
a = 0.022 Ik = 163.8

n = 24 r = 0.956 (20 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 115-3 Time: 0259 (LAT)
0422 (PDT)
Depth: 9.9 m
Chlor a: 10.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.41 Im = 655.4
a = 0.015 Ik = 156.9

n = 25 r = 0.967 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 116-7 Time: 0454 (LAT)
0617 (PDT)
Depth: 10.0 m
Chlor a: 7.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.62 Im = 616.9
a = 0.022 Ik = 162.2

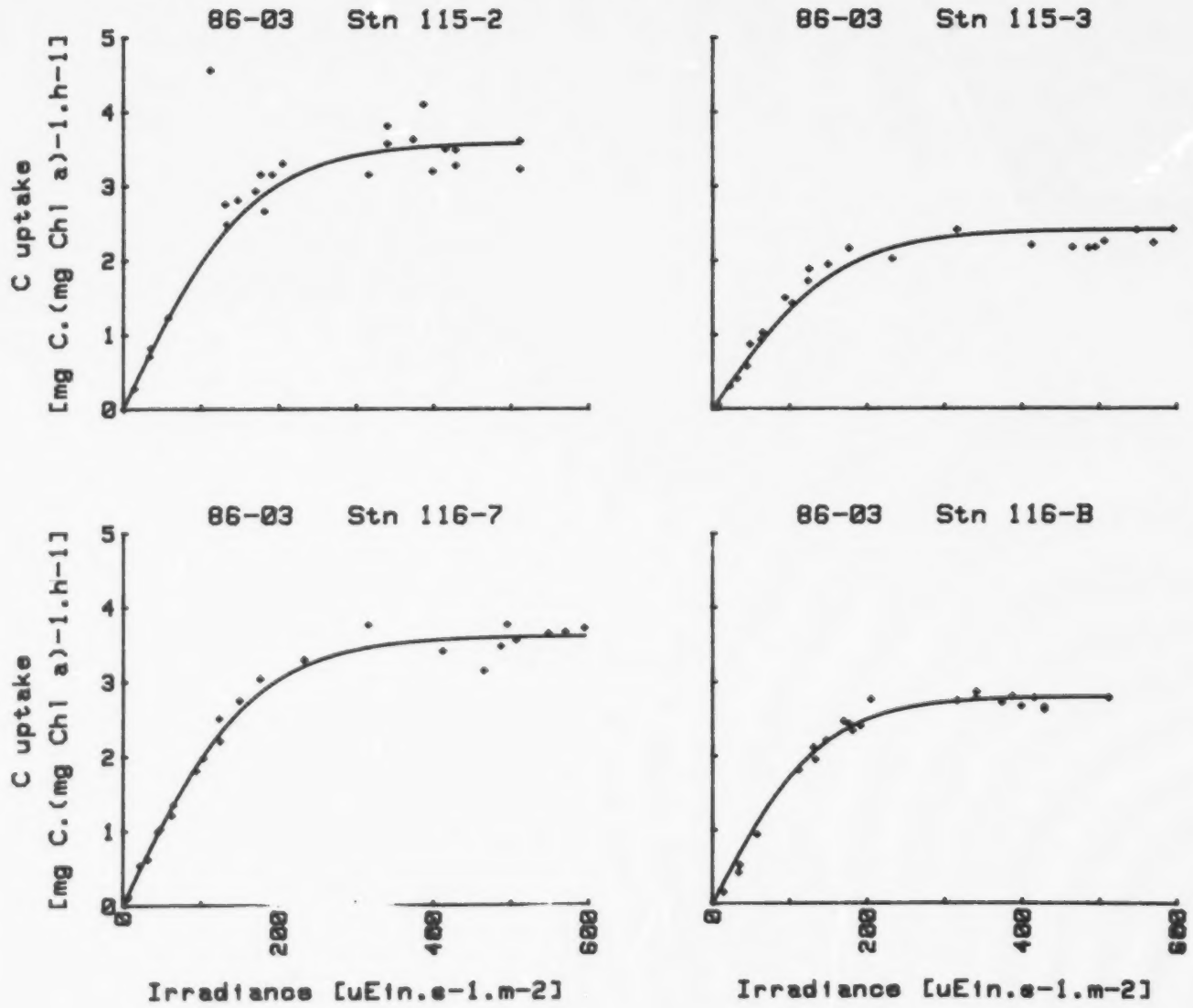
n = 25 r = 0.988 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 116-B Time: 0454 (LAT)
0617 (PDT)
Depth: 0.0 m
Chlor a: 12.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.79 Im = 563.0
a = 0.020 Ik = 143.0

n = 25 r = 0.985 (21 d.f.)


86-03 Stn 115-2
86-03 Stn 115-3
86-03 Stn 116-7
86-03 Stn 116-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.e-1.m-2]
0
1
2
3
4
5
200
400
600

Cruise: 86-03 Date: 86.06.27
Station: 117-2 Time: 0653 (LAT)
0816 (PDT)
Depth: 20.5 m
Chlor a: 3.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.23 Im = 473.9
a = 0.025 Ik = 128.6

n = 24 r = 0.927 (20 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 117-3 Time: 0653 (LAT)
0816 (PDT)
Depth: 8.1 m
Chlor a: 13.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.22 Im = 869.6
a = 0.015 Ik = 208.5

n = 25 r = 0.986 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 118-3 Time: 0850 (LAT)
1013 (PDT)
Depth: 10.1 m
Chlor a: 11.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.96 Im = 663.4
a = 0.023 Ik = 175.1

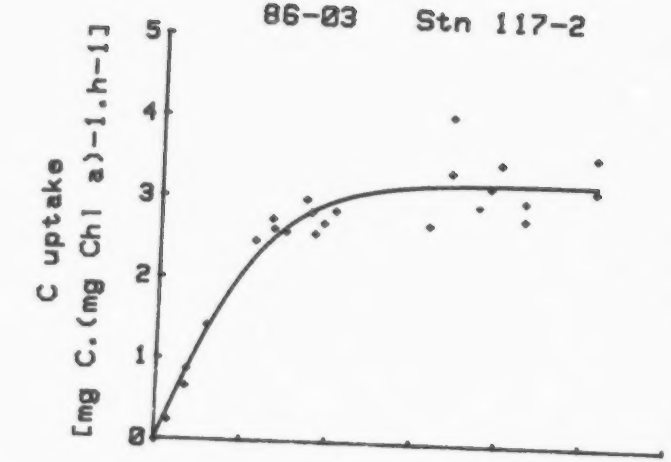
n = 25 r = 0.990 (21 d.f.)

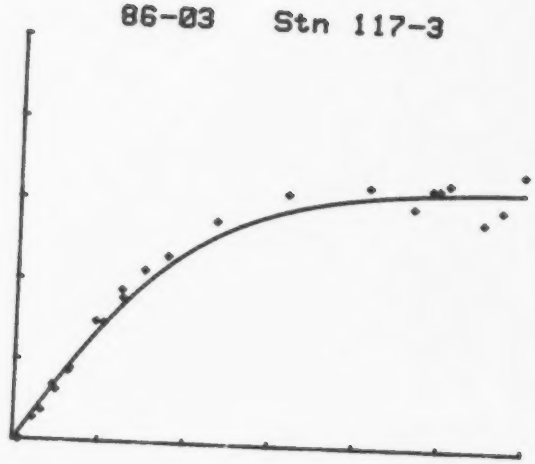
Cruise: 86-03 Date: 86.06.27
Station: 118-B Time: 0850 (LAT)
1013 (PDT)
Depth: 0.0 m
Chlor a: 11.5 mg.m-3

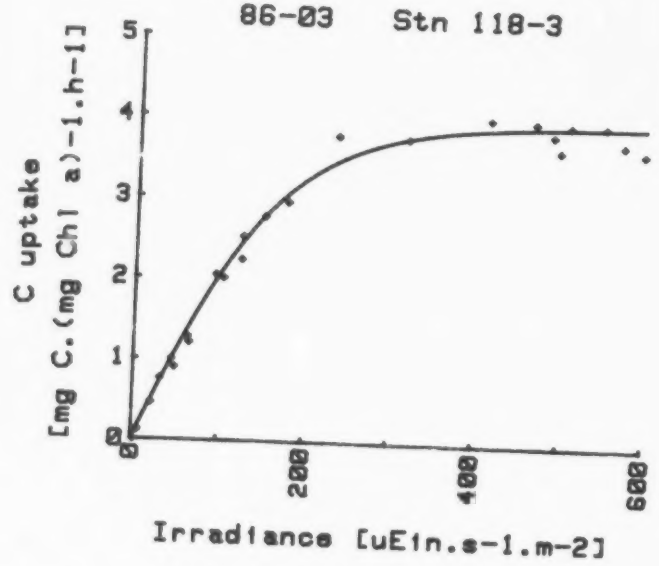
Parameter estimates: Derived parameters:

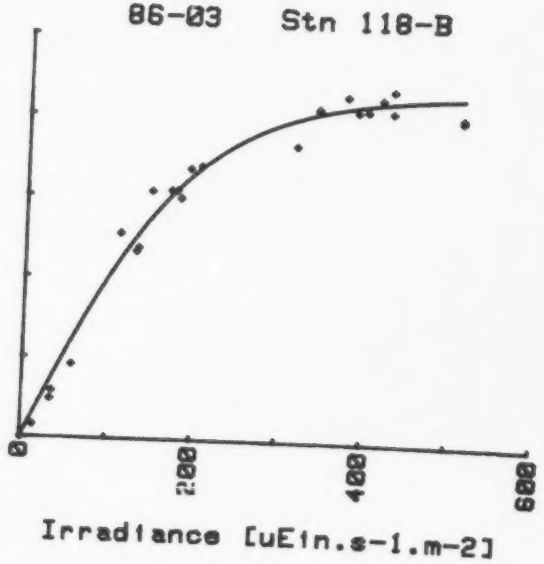
Pm = 4.34 Im = 760.1
a = 0.022 Ik = 198.7

n = 25 r = 0.982 (21 d.f.)


86-03 Stn 117-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-03 Stn 117-3


86-03 Stn 118-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 118-B
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.27
Station: 119-7 Time: 1051 (LAT)
1214 (PDT)
Depth: 19.6 m
Chlor a: 0.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.16 Im = 641.1
a = 0.024 Ik = 172.2

n = 23 r = 0.490 (19 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 119-8 Time: 1051 (LAT)
1214 (PDT)
Depth: 8.1 m
Chlor a: 1.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.88 Im = 672.6
a = 0.012 Ik = 152.9

n = 20 r = 0.891 (16 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 120-2 Time: 1257 (LAT)
1420 (PDT)
Depth: 9.5 m
Chlor a: 11.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.78 Im = 545.7
a = 0.025 Ik = 148.6

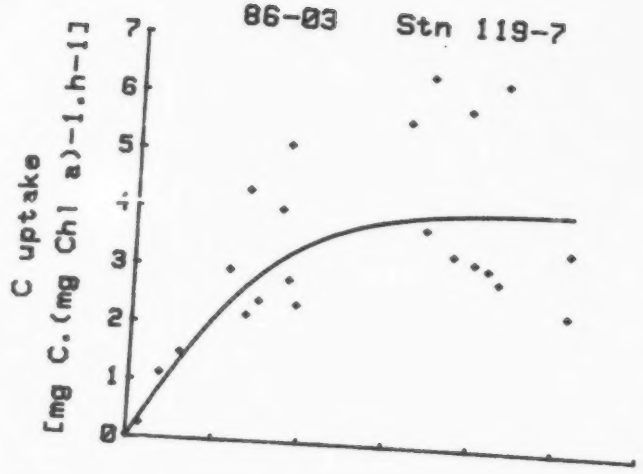
n = 25 r = 0.986 (21 d.f.)

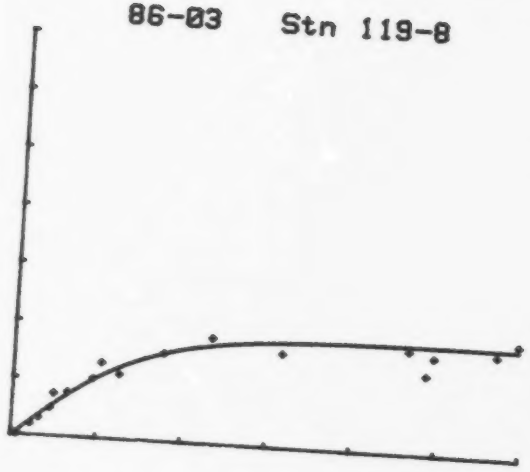
Cruise: 86-03 Date: 86.06.27
Station: 120-B Time: 1257 (LAT)
1420 (PDT)
Depth: 0.0 m
Chlor a: 9.7 mg.m-3

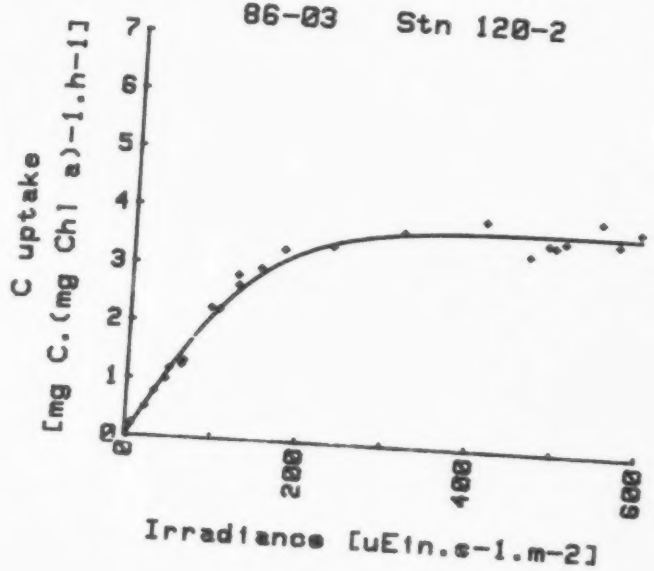
Parameter estimates: Derived parameters:

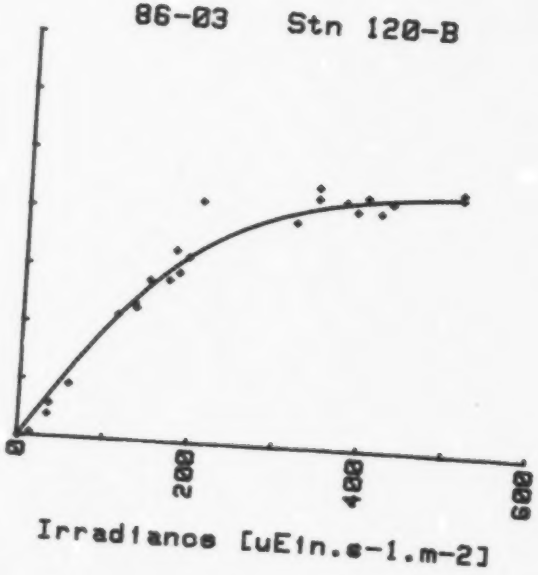
Pm = 4.52 Im = 817.0
a = 0.021 Ik = 212.2

n = 25 r = 0.974 (21 d.f.)


86-03 Stn 119-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
7


86-03 Stn 119-8


86-03 Stn 120-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
7
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 120-8
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.27
Station: 121-2 Time: 1458 (LAT)
1621 (PDT)
Depth: 22.2 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.37 Im = 284.9
a = 0.038 Ik = 87.5

n = 25 r = 0.782 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 121-3 Time: 1458 (LAT)
1621 (PDT)
Depth: 11.9 m
Chlor a: 13.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.09 Im = 583.0
a = 0.026 Ik = 159.2

n = 25 r = 0.988 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 122-6 Time: 1639 (LAT)
1802 (PDT)
Depth: 10.3 m
Chlor a: 10.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.65 Im = 560.7
a = 0.029 Ik = 158.8

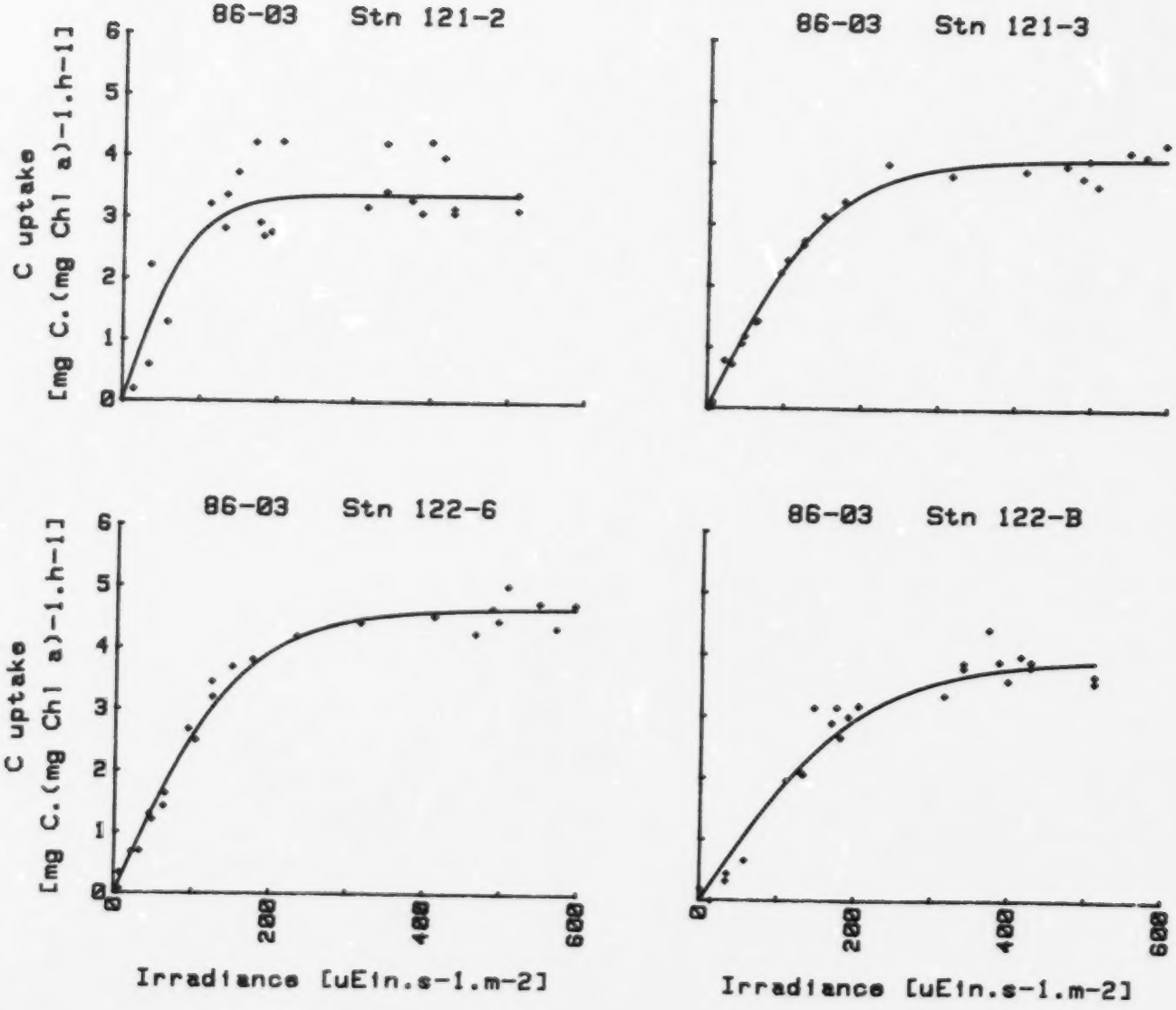
n = 25 r = 0.985 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 122-B Time: 1639 (LAT)
1802 (PDT)
Depth: 0.0 m
Chlor a: 8.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.94 Im = 836.7
a = 0.019 Ik = 210.4

n = 25 r = 0.948 (21 d.f.)


86-03 Stn 121-2
86-03 Stn 121-3
86-03 Stn 122-6
86-03 Stn 122-B
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
6
200
400
600

Cruise: 86-03 Date: 86.06.27
Station: 123-2 Time: 1852 (LAT)
2015 (PDT)
Depth: 21.2 m
Chlor a: 2.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.98 Im = 640.0
a = 0.019 Ik = 160.5

n = 22 r = 0.926 (18 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 123-3 Time: 1852 (LAT)
2015 (PDT)
Depth: 12.0 m
Chlor a: 16.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.50 Im = 480.8
a = 0.020 Ik = 123.3

n = 25 r = 0.987 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 124-3 Time: 2056 (LAT)
2219 (PDT)
Depth: 10.8 m
Chlor a: 13.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.22 Im = 386.5
a = 0.022 Ik = 101.2

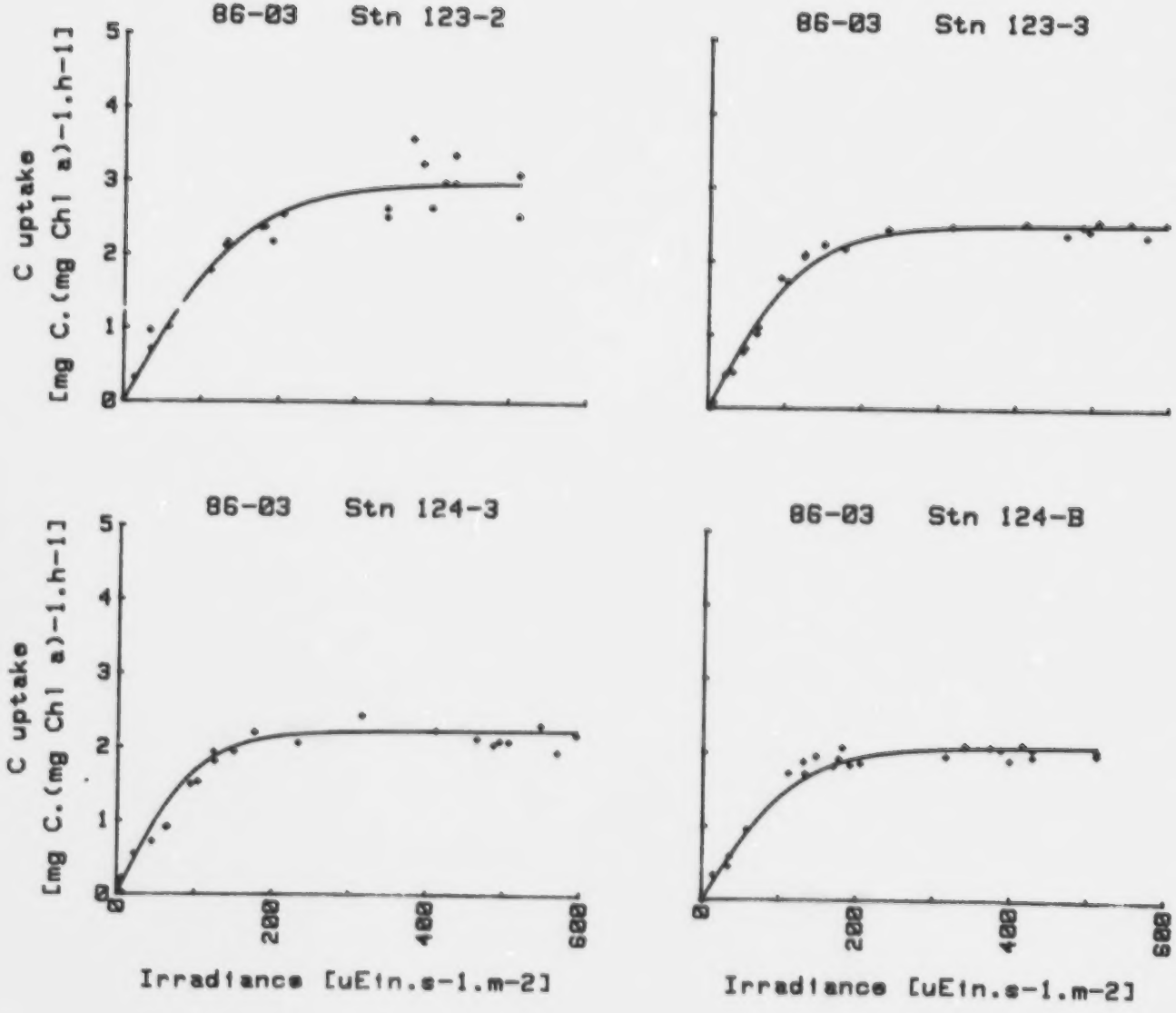
n = 25 r = 0.851 (21 d.f.)

Cruise: 86-03 Date: 86.06.27
Station: 124-B Time: 2056 (LAT)
2219 (PDT)
Depth: 0.0 m
Chlor a: 11.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.09 Im = 493.2
a = 0.017 Ik = 121.4

n = 25 r = 0.968 (21 d.f.)


86-03 Stn 123-2
86-03 Stn 123-3
86-03 Stn 124-3
86-03 Stn 124-B
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
200
400
600

Cruise: 86-03 Date: 86.06.28
Station: 125-7 Time: 2254 (LAT)
0017 (PDT)
Depth: 19.6 m
Chlor a: 3.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.20 Im = 757.9
a = 0.013 Ik = 173.5

n = 24 r = 0.703 (20 d.f.)

Cruise: 86-03 Date: 86.06.28
Station: 125-8 Time: 2254 (LAT)
0017 (PDT)
Depth: 10.1 m
Chlor a: 11.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.01 Im = 479.7
a = 0.017 Ik = 117.9

n = 25 r = 0.960 (21 d.f.)

Cruise: 86-03 Date: 86.06.28
Station: 126-2 Time: 0055 (LAT)
0218 (PDT)
Depth: 6.7 m
Chlor a: 11.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.12 Im = 514.1
a 0.017 Ik = 125.9

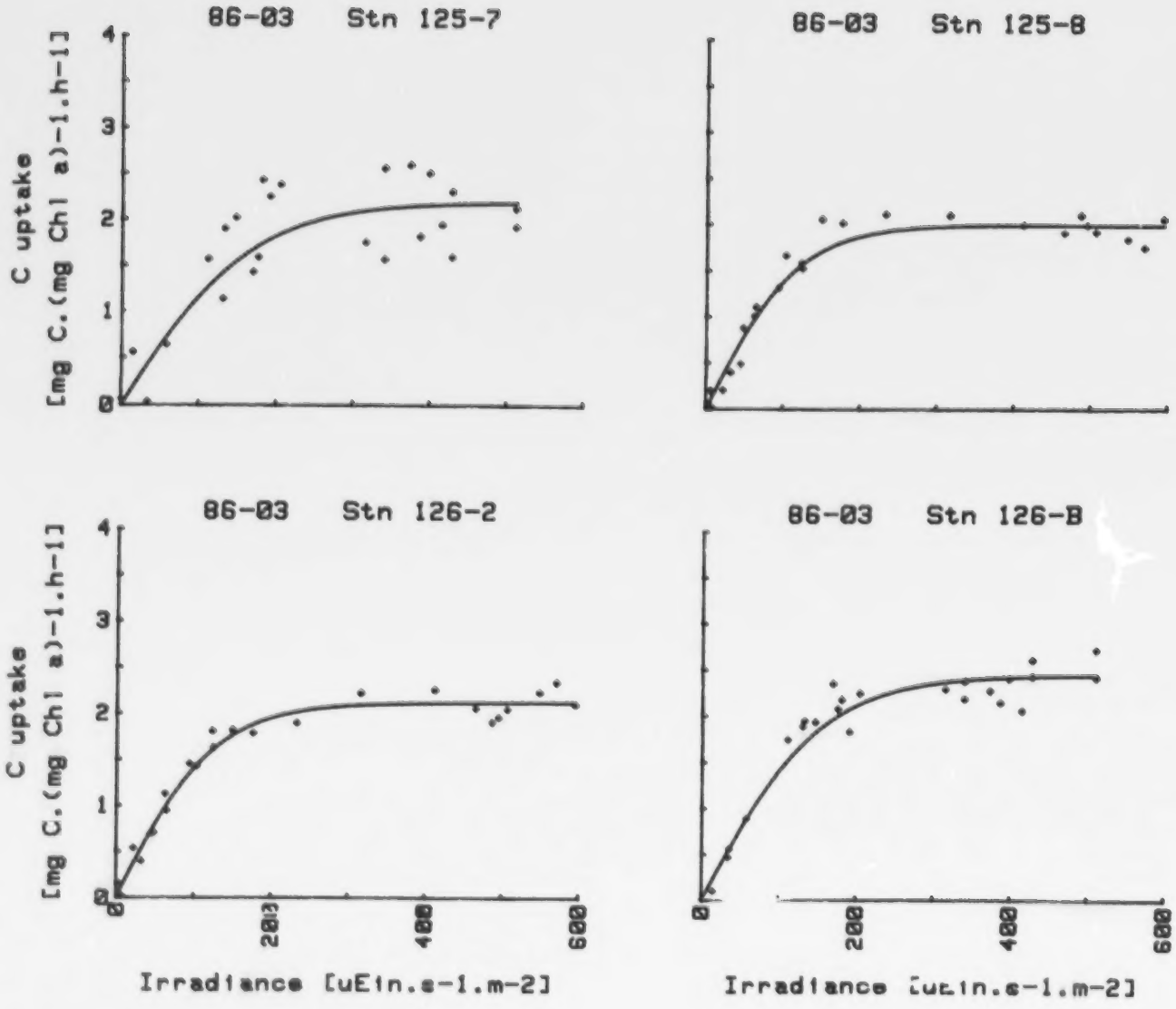
n = 25 r = 0.973 (21 d.f.)

Cruise: 86-03 Date: 86.06.28
Station: 126-B Time: 0055 (LAT)
0218 (PDT)
Depth: 0.0 m
Chlor a: 9.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.45 Im = 620.5
a = 0.016 Ik = 150.6

n = 25 r = 0.945 (21 d.f.)


86-03 Stn 125-7
86-03 Stn 125-8
86-03 Stn 126-2
86-03 Stn 126-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
200
400
600

Cruise: 86-03 Date: 86.06.28
Station: 127-2 Time: 0258 (LAT)
0421 (PDT)
Depth: 21.7 m
Chlor a: 2.8 mg.m-3

Parameter estimates: Derived parameters.

Pm = 0.32 Im = 917.0
a = 0.002 Ik = 148.9

n = 25 r = 0.939 (21 d.f.)

Cruise: 86-03 Date: 86.06.28
Station: 127-3 Time: 0258 (LAT)
0421 (PDT)
Depth: 10.3 m
Chlor a: 12.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.28 Im = 904.4
a = 0.002 Ik = 144.9

n = 25 r = 0.975 (21 d.f.)

Cruise: 86-03 Date: 86.06.28
Station: 128-6 Time: 0449 (LAT)
0612 (PDT)
Depth: 11.5 m
Chlor a: 13.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.46 Im = 556.3
a = 0.023 Ik = 148.1

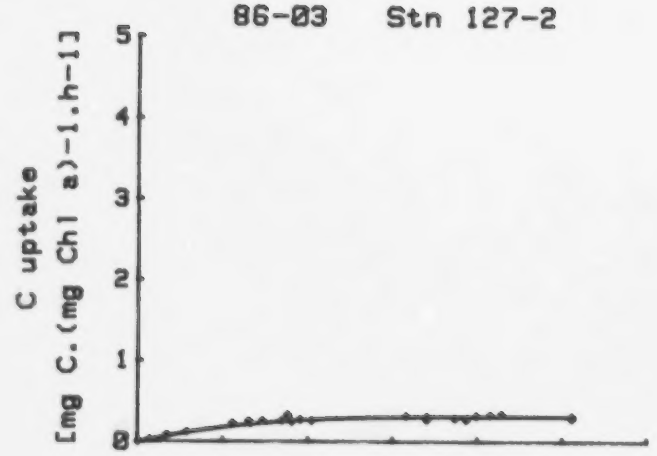
n = 25 r = 0.984 (21 d.f.)

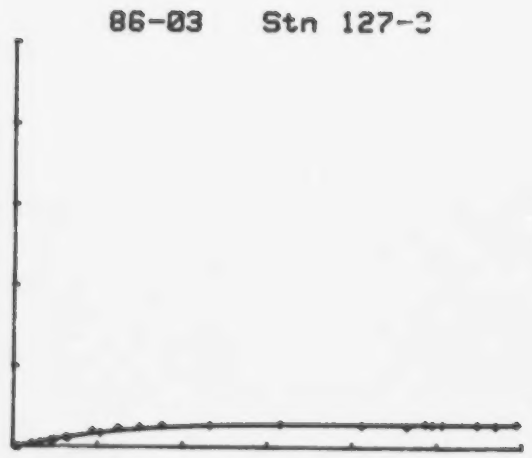
Cruise: 86-03 Date: 86.06.28
Station: 128-B Time: 0449 (LAT)
0612 (PDT)
Depth: 0.0 m
Chlor a: 13.5 mg.m-3

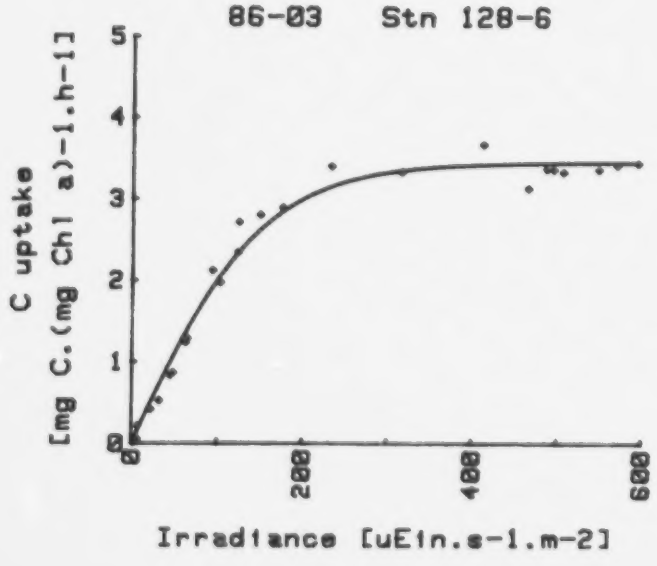
Parameter estimates: Derived parameters:

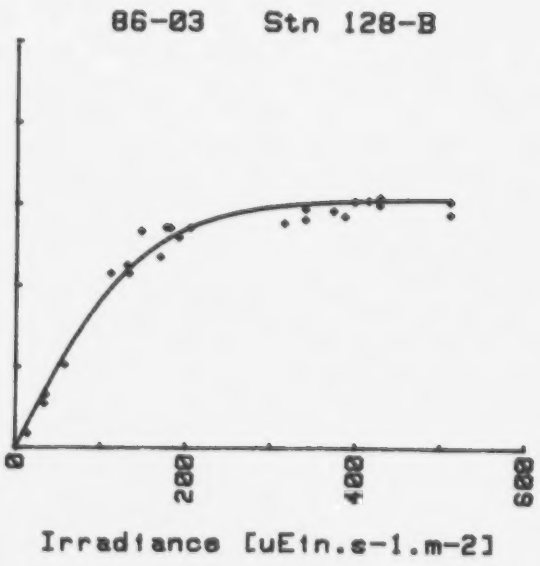
Pm = 3.06 Im = 558.4
a = 0.021 Ik = 144.8

n = 25 r = 0.979 (21 d.f.)


86-03 Stn 127-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-03 Stn 127-3


86-03 Stn 128-6
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 128-8
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.29
Station: 133-7 Time: 0335 (LAT)
0500 (PDT)
Depth: 17.0 m
Chlor a: 3.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.77 Im = 304.2
a = 0.022 Ik = 79.9

n = 25 r = 0.926 (21 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 133-8 Time: 0335 (LAT)
0500 (PDT)
Depth: 7.1 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.43 Im = 507.0
a = 0.012 Ik = 115.5

n = 25 r = 0.946 (21 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 135-1 Time: 0615 (LAT)
0740 (PDT)
Depth: 21.0 m
Chlor a: 2.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.02 Im = 608.2
a = 0.014 Ik = 142.8

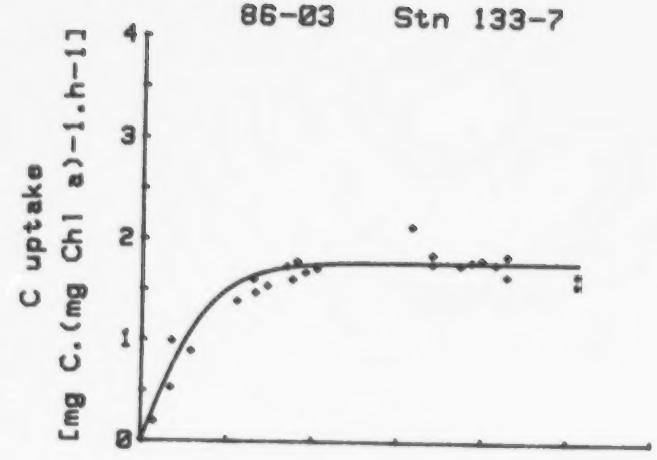
n = 25 r = 0.923 (21 d.f.)

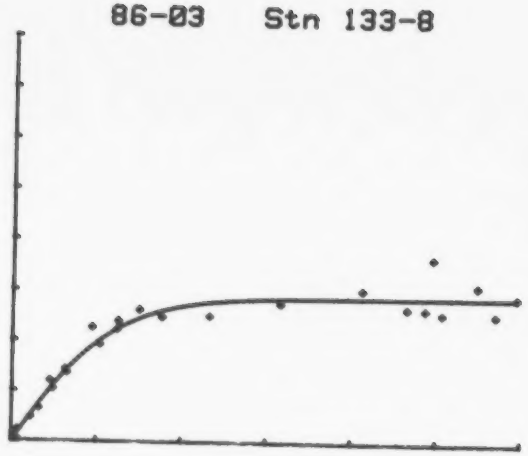
Cruise: 86-03 Date: 86.06.29
Station: 135-2 Time: 0615 (LAT)
0740 (PDT)
Depth: 6.1 m
Chlor a: 1.7 mg.m-3

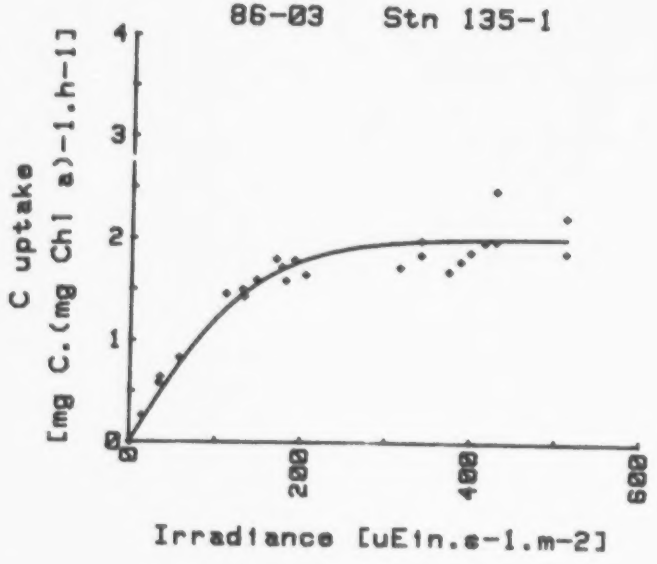
Parameter estimates: Derived parameters:

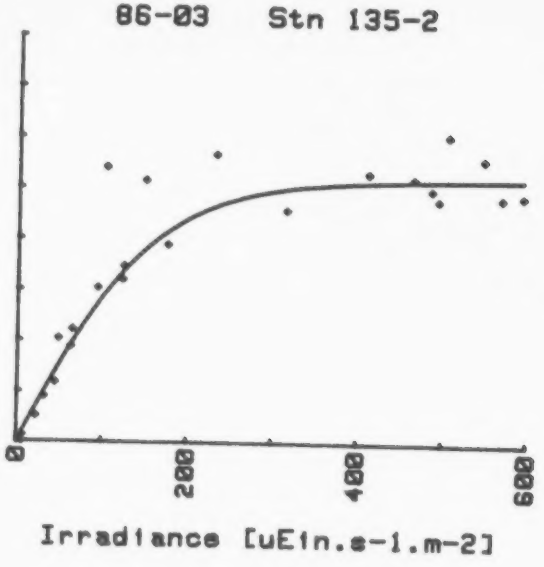
Pm = 2.60 Im = 664.2
a = 0.016 Ik = 160.9

n = 22 r = 0.966 (18 d.f.)


86-03 Stn 133-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4


86-03 Stn 133-8


86-03 Stn 135-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 135-2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.29
Station: 136-2 Time: 0802 (LAT)
0927 (PDT)
Depth: 21.5 m
Chlor a: 1.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.83 Im = 224.3
a = 0.029 Ik = 63.3

n = 25 r = 0.919 (21 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 136-3 Time: 0802 (LAT)
0927 (PDT)
Depth: 5.2 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.77 Im = 688.2
a = 0.017 Ik = 167.8

n = 25 r = 0.982 (21 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 137-2 Time: 0956 (LAT)
1121 (PDT)
Depth: 20.9 m
Chlor a: 2.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.15 Im = 418.2
a = 0.020 Ik = 107.0

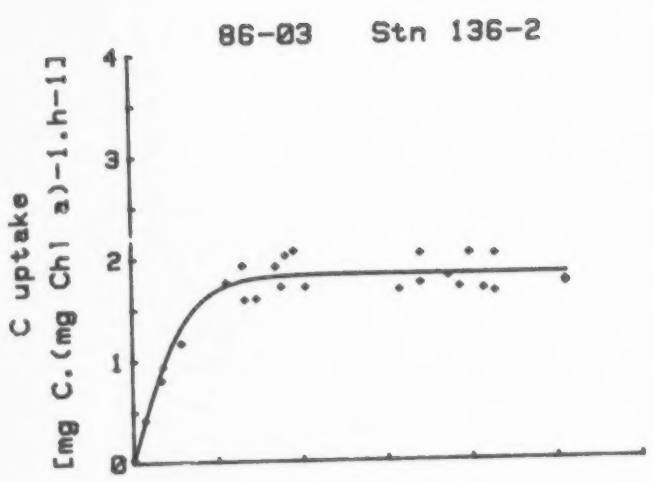
n = 25 r = 0.882 (21 d.f.)

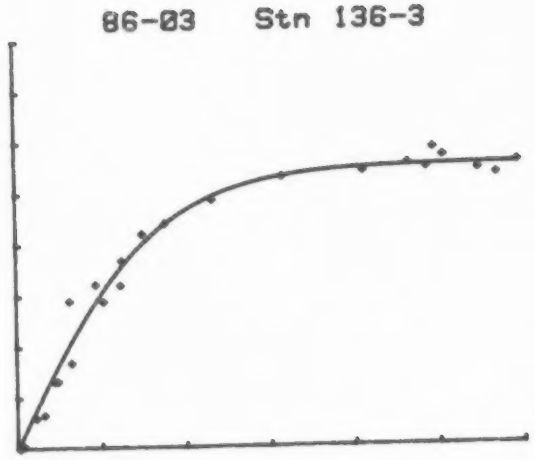
Cruise: 86-03 Date: 86.06.29
Station: 137-3 Time: 0956 (LAT)
1121 (PDT)
Depth: 8.7 m
Chlor a: 1.7 mg.m-3

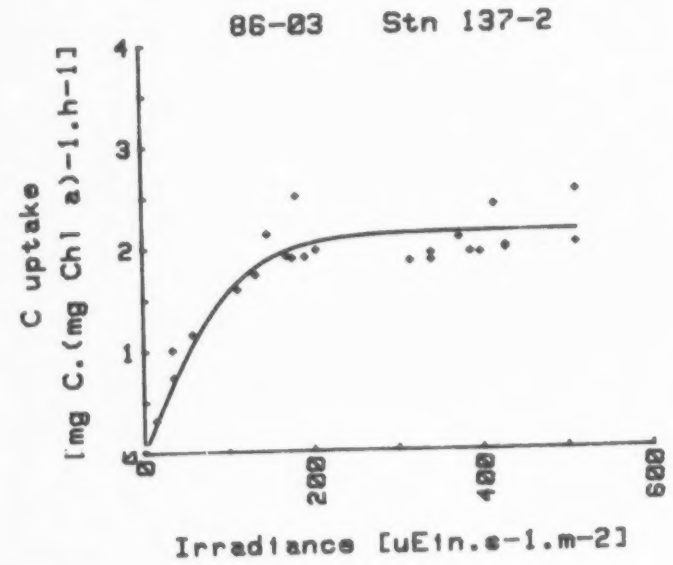
Parameter estimates: Derived parameters:

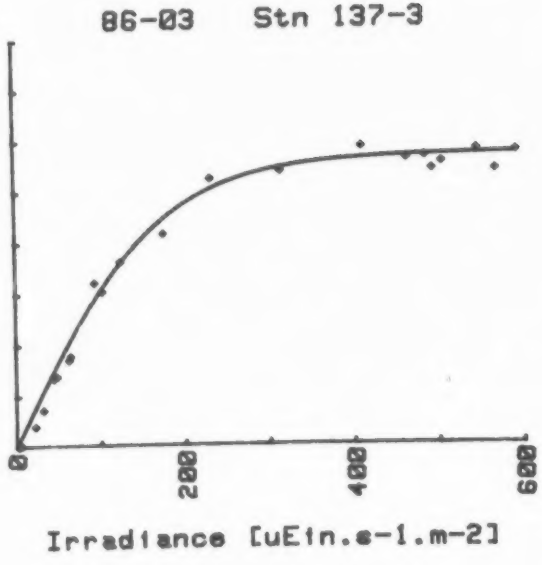
Pm = 2.86 Im = 702.6
a = 0.017 Ik = 171.6

n = 23 r = 0.969 (19 d.f.)


86-03 Stn 136-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4


86-03 Stn 136-3


86-03 Stn 137-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 137-3
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.29
Station: 138-7 Time: 1157 (LAT)
1322 (PDT)
Depth: 19.9 m
Chlor a: 1.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.86 Im = 239.7
a = 0.028 Ik = 66.9

n = 21 r = 0.811 (17 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 138-8 Time: 1157 (LAT)
1322 (PDT)
Depth: 10.8 m
Chlor a: 1.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.34 Im = 421.3
a = 0.021 Ik = 109.5

n = 24 r = 0.953 (20 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 139-1 Time: 1345 (LAT)
1510 (PDT)
Depth: 21.2 m
Chlor a: 1.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.39 Im = 426.2
a = 0.021 Ik = 111.0

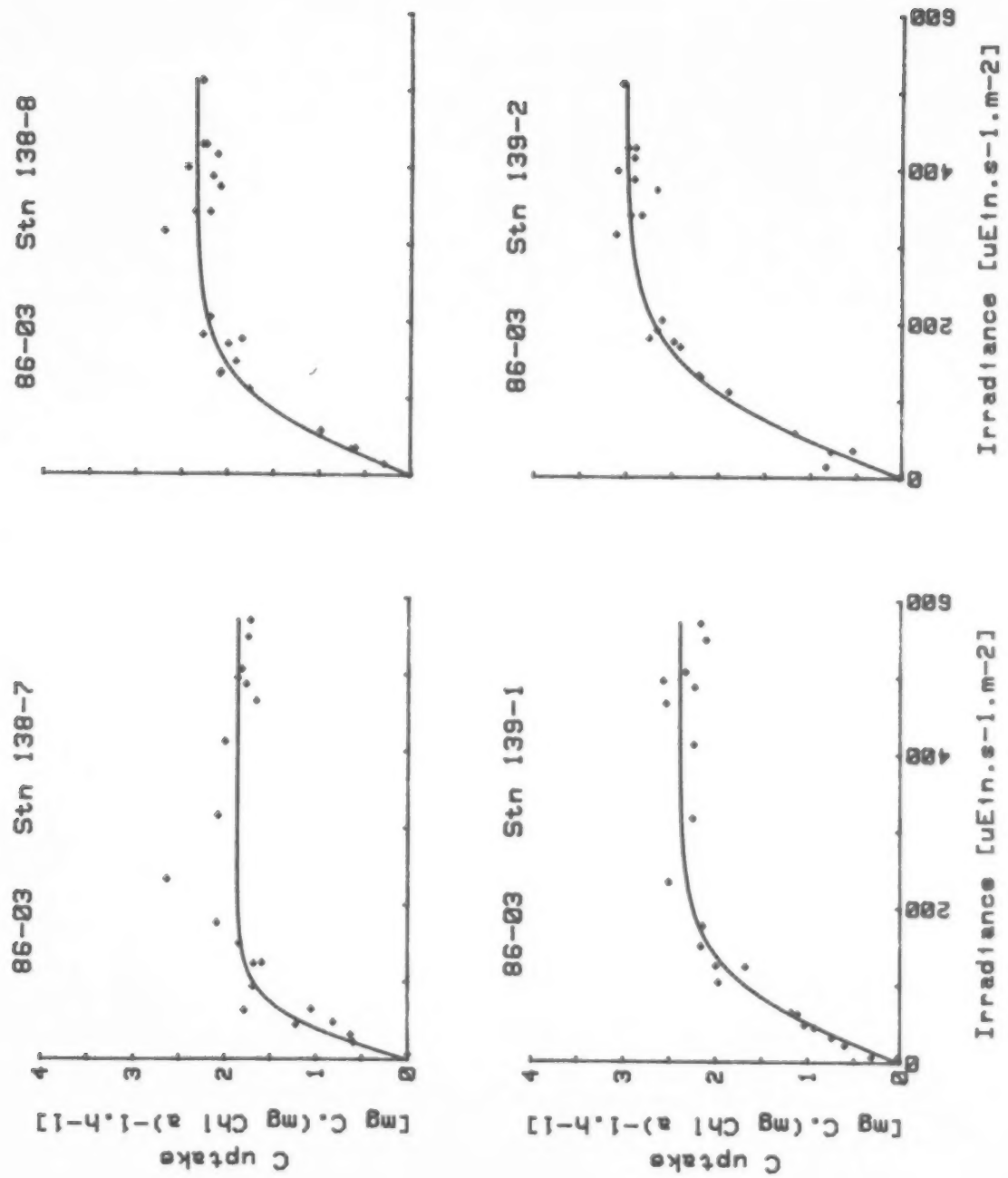
n = 24 r = 0.952 (20 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 139-2 Time: 1345 (LAT)
1510 (PDT)
Depth: 12.2 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.00 Im = 534.0
a = 0.022 Ik = 139.2

n = 24 r = 0.970 (20 d.f.)


86-03 Stn 138-8
86-03 Stn 139-2
86-03 Stn 138-7
86-03 Stn 139-1
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
200
400
600
1
2
3
4

Cruise: 86-03 Date: 86.06.29
Station: 140-1 Time: 1542 (LAT)
1707 (PDT)
Depth: 22.2 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.10 Im = 588.2
a = 0.015 Ik = 140.0

n = 25 r = 0.885 (21 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 140-2 Time: 1542 (LAT)
1707 (PDT)
Depth: 9.6 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.24 Im = 640.2
a = 0.015 Ik = 151.8

n = 24 r = 0.932 (20 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 141-1 Time: 1757 (LAT)
1922 (PDT)
Depth: 22.3 m
Chlor a: 1.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.47 Im = 395.8
a = 0.016 Ik = 95.0

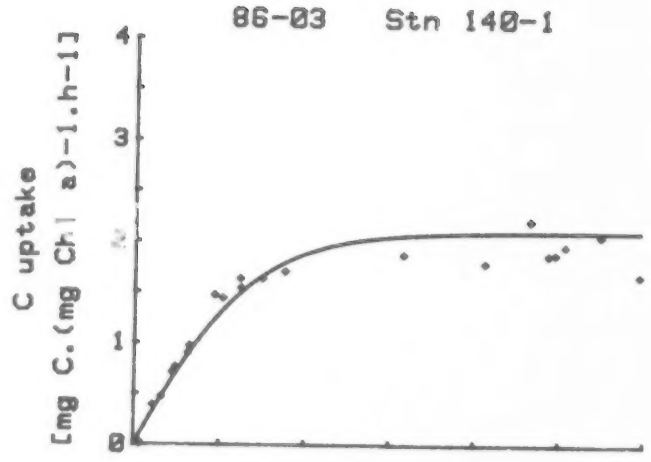
n = 24 r = 0.929 (20 d.f.)

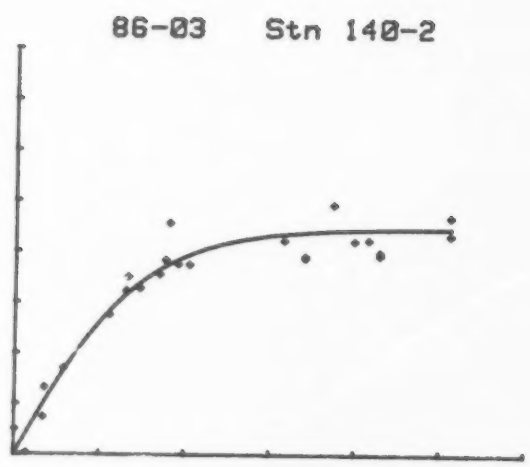
Cruise: 86-03 Date: 86.06.29
Station: 141-2 Time: 1757 (LAT)
1922 (PDT)
Depth: 11.7 m
Chlor a: 1.2 mg.m-3

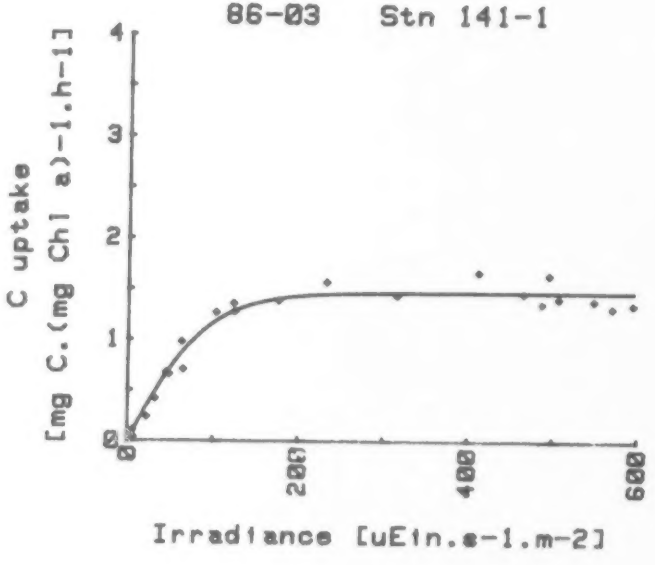
Parameter estimates: Derived parameters:

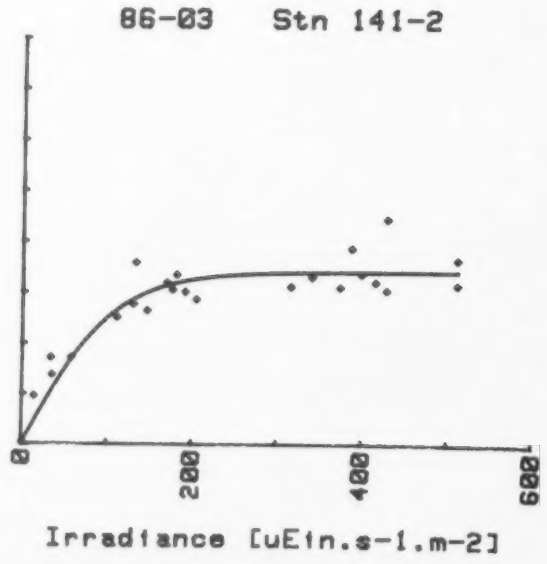
Pm = 1.71 Im = 431.7
a = 0.016 Ik = 104.8

n = 25 r = 0.844 (21 d.f.)


86-03 Stn 140-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
3
4


86-03 Stn 140-2


86-03 Stn 141-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 141-2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.29
Station: 142-1 Time: 1947 (LAT)
2112 (PDT)
Depth: 18.9 m
Chlor a: 1.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.17 Im = 627.8
a = 0.009 Ik = 132.7

n = 21 r = 0.943 (17 d.f.)

Cruise: 86-03 Date: 86.06.29
Station: 142-2 Time: 1947 (LAT)
2112 (PDT)
Depth: 6.6 m
Chlor a: 3.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.12 Im = 250.8
a = 0.018 Ik = 62.4

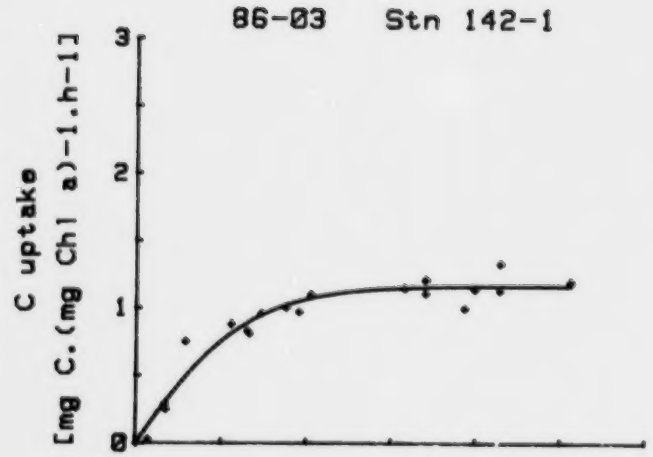
n = 21 r = 0.931 (17 d.f.)

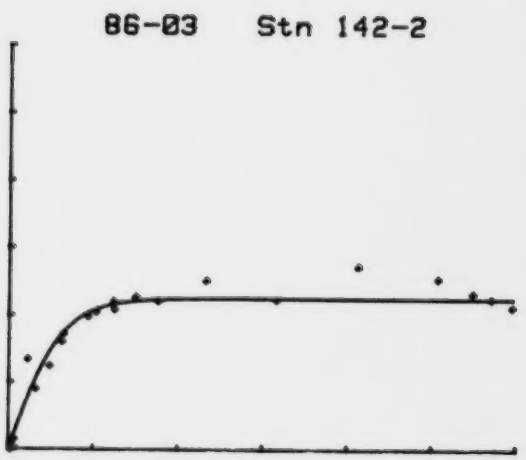
Cruise: 86-03 Date: 86.06.29
Station: 143-1 Time: 2203 (LAT)
2328 (PDT)
Depth: 14.7 m
Chlor a: 2.8 mg.m-3

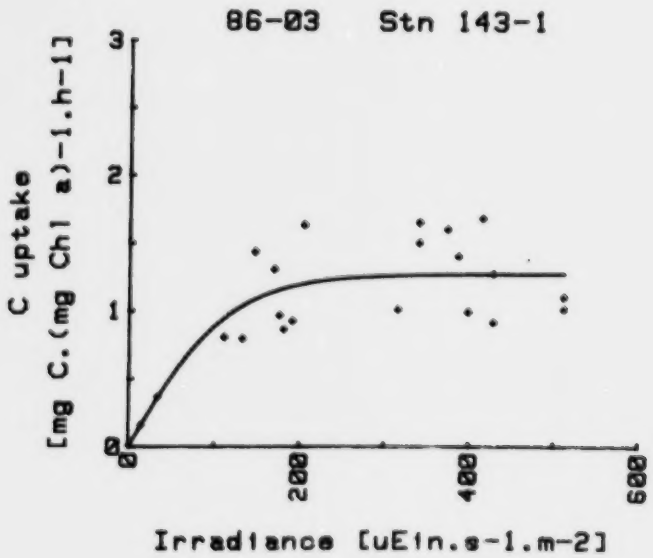
Parameter estimates: Derived parameters:

Pm = 1.28 Im = 501.1
a = 0.011 Ik = 112.1

n = 23 r = 0.576 (19 d.f.)


86-03 Stn 142-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3


86-03 Stn 142-2


86-03 Stn 143-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.30
Station: 144-7 Time: 2356 (LAT)
0121 (PDT)
Depth: 19.5 m
Chlor a: 2.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.00 Im = 305.3
a = 0.014 Ik = 71.4

n = 25 r = 0.870 (21 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 144-8 Time: 2356 (LAT)
0121 (PDT)
Depth: 9.0 m
Chlor a: 1.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.86 Im = 610.5
a = 0.007 Ik = 123.0

n = 23 r = 0.848 (19 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 145-1 Time: 0158 (LAT)
0323 (PDT)
Depth: 15.3 m
Chlor a: 1.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.59 Im = 315.4
a = 0.029 Ik = 89.1

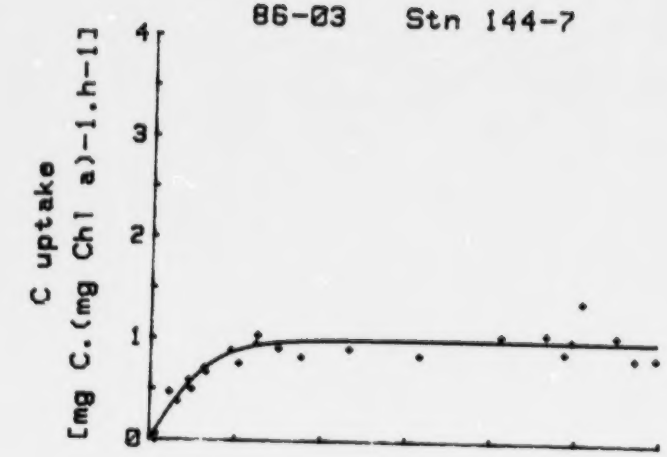
n = 20 r = 0.851 (16 d.f.)

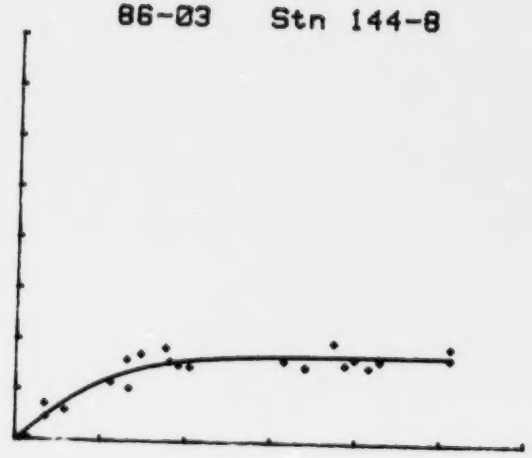
Cruise: 86-03 Date: 86.06.30
Station: 145-2 Time: 0158 (LAT)
0323 (PDT)
Depth: 8.7 m
Chlor a: 2.5 mg.m-3

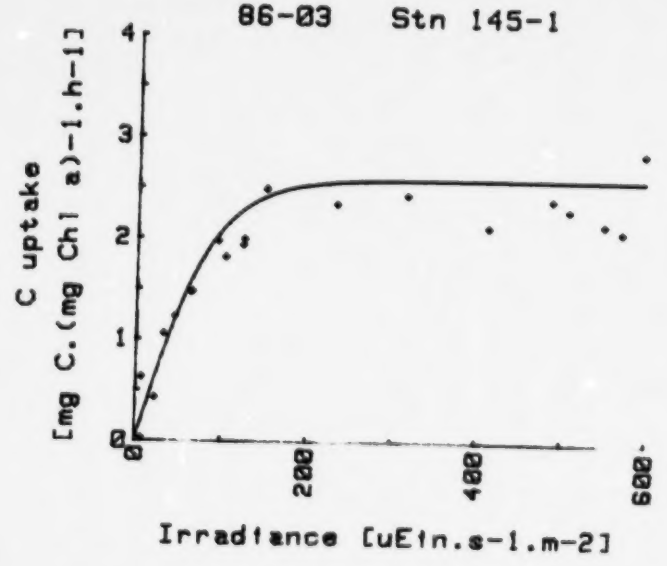
Parameter estimates: Derived parameters:

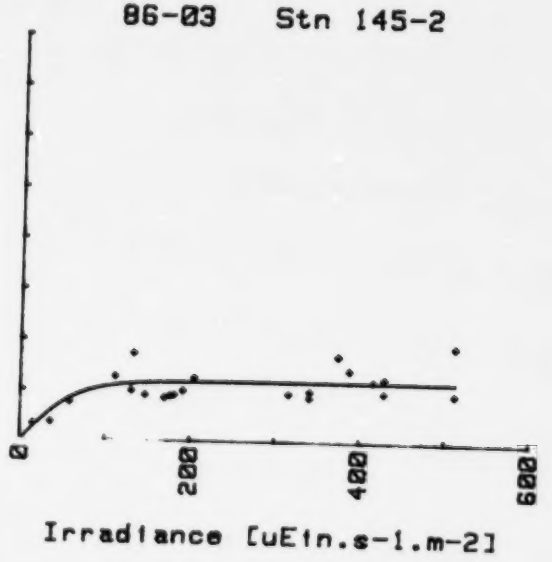
Pm = 0.59 Im = 300.9
a = 0.009 Ik = 64.1

n = 23 r = 0.531 (19 d.f.)


86-03 Stn 144-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4


86-03 Stn 144-8


86-03 Stn 145-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 145-2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86-06.30
Station: 146-1 Time: 0351 (LAT)
0516 (PDT)
Depth: 15.3 m
Chlor a: 3.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.67 Im = 711.5
a = 0.005 Ik = 134.3

n = 23 r = 0.949 (19 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 146-2 Time: 0351 (LAT)
0516 (PDT)
Depth: 3.9 m
Chlor a: 1.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.46 Im = 337.1
a = 0.042 Ik = 106.3

n = 23 r = 0.970 (19 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 147-1 Time: 0551 (LAT)
0716 (PDT)
Depth: 15.8 m
Chlor a: 2.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.39 Im = 705.4
a = 0.014 Ik = 166.2

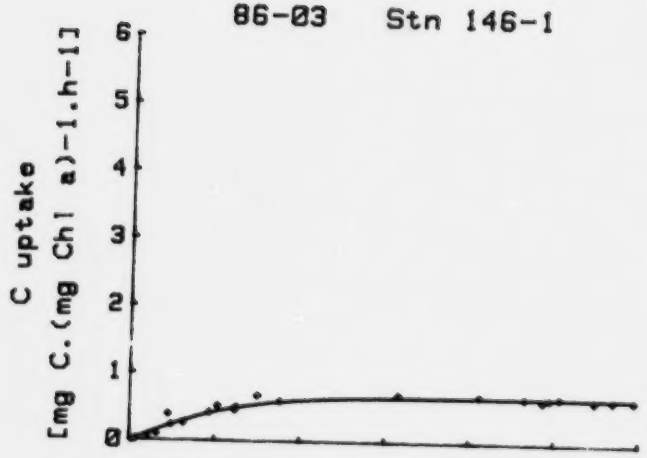
n = 24 r = 0.683 (20 d.f.)

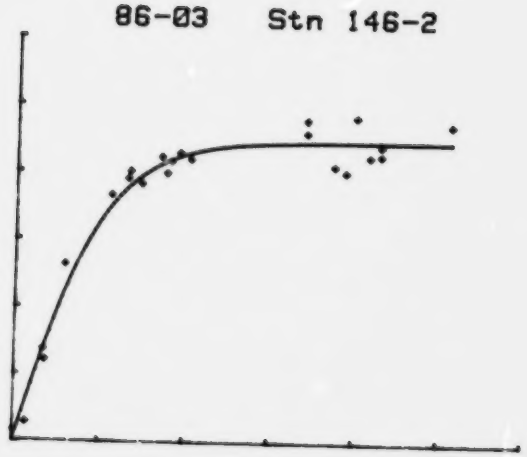
Cruise: 86-03 Date: 86.06.30
Station: 147-2 Time: 0551 (LAT)
0716 (PDT)
Depth: 3.8 m
Chlor a: 1.0 mg.m-3

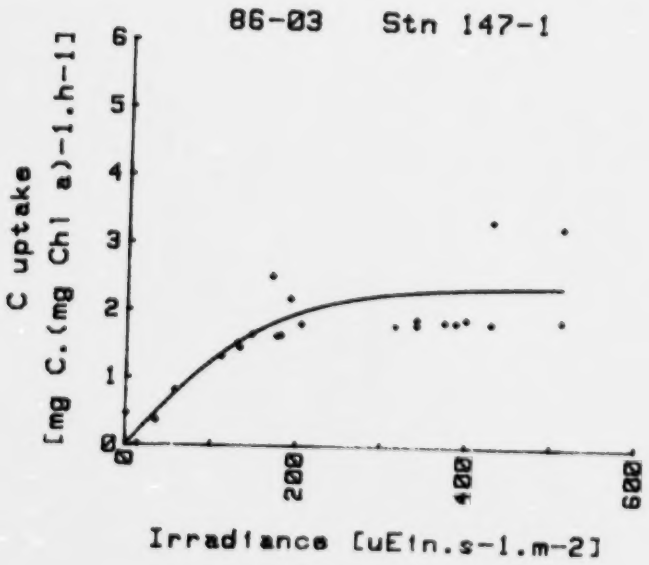
Parameter estimates: Derived parameters:

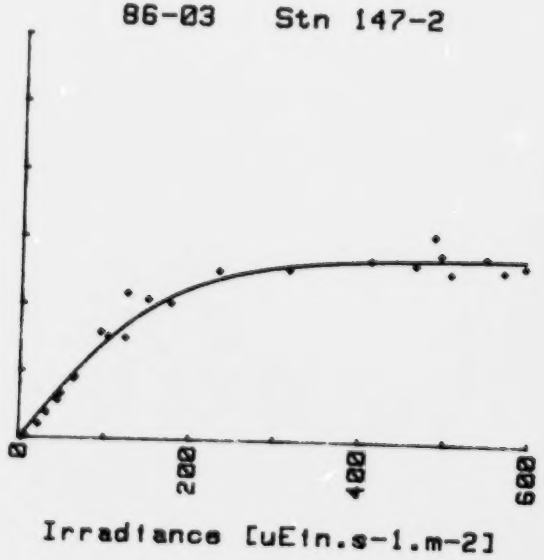
Pm = 2.73 Im = 695.0
a = 0.016 Ik = 168.6

n = 25 r = 0.975 (21 d.f.)


86-03 Stn 146-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6


86-03 Stn 146-2


86-03 Stn 147-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 147-2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.30
Station: 148-2 Time: 0820 (LAT)
0945 (PDT)
Depth: 19.6 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.32 Im = 613.7
a = 0.016 Ik = 147.7

n = 24 r = 0.912 (20 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 148-3 Time: 0820 (LAT)
0945 (PDT)
Depth: 5.1 m
Chlor a: 1.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.26 Im = 742.6
a = 0.018 Ik = 184.1

n = 25 r = 0.951 (21 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 149-2 Time: 0957 (LAT)
1122 (PDT)
Depth: 18.6 m
Chlor a: 1.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.51 Im = 323.6
a = 0.028 Ik = 90.3

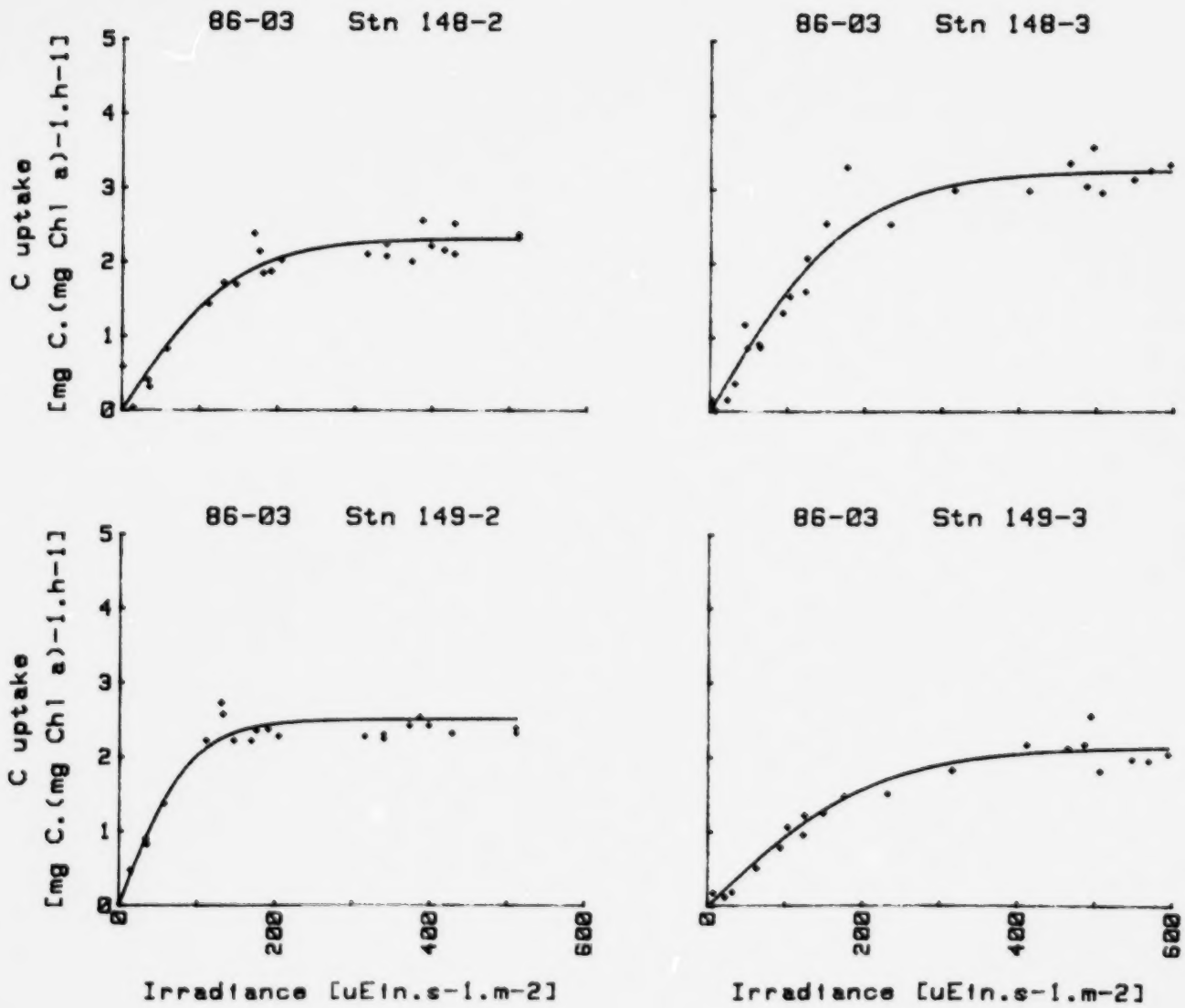
n = 23 r = 0.936 (19 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 149-3 Time: 0957 (LAT)
1122 (PDT)
Depth: 5.2 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.15 Im = 1036.9
a = 0.010 Ik = 223.3

n = 21 r = 0.957 (17 d.f.)


86-03 Stn 148-2
86-03 Stn 148-3
86-03 Stn 149-2
86-03 Stn 149-3
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
200
400
600

Cruise: 86-03 Date: 86.06.30
Station: 150-7 Time: 1152 (LAT)
1317 (PDT)
Depth: 20.0 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.27 Im = 300.3
a = 0.027 Ik = 83.4

n = 24 r = 0.918 (20 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 150-8 Time: 1152 (LAT)
1317 (PDT)
Depth: 8.0 m
Chlor a: 1.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.17 Im = 1111.4
a = 0.016 Ik = 267.1

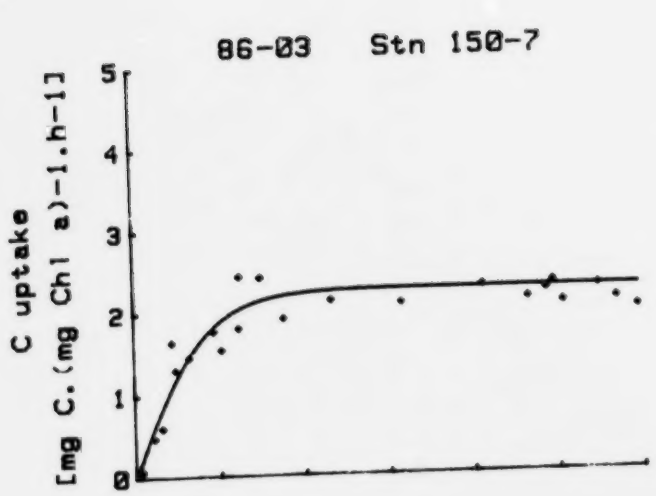
n = 24 r = 0.966 (20 d.f.)

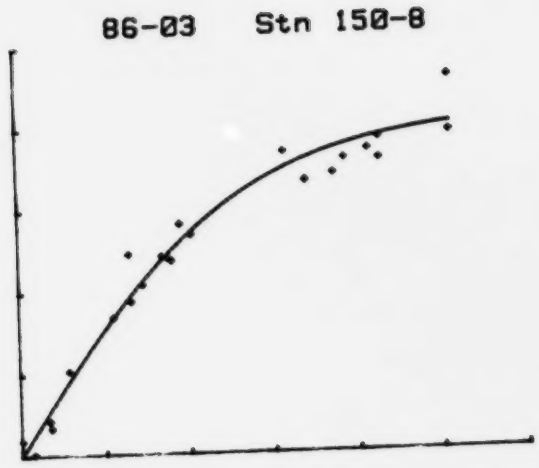
Cruise: 86-03 Date: 86.06.30
Station: 151-1 Time: 1349 (LAT)
1514 (PDT)
Depth: 15.3 m
Chlor a: 2.0 mg.m-3

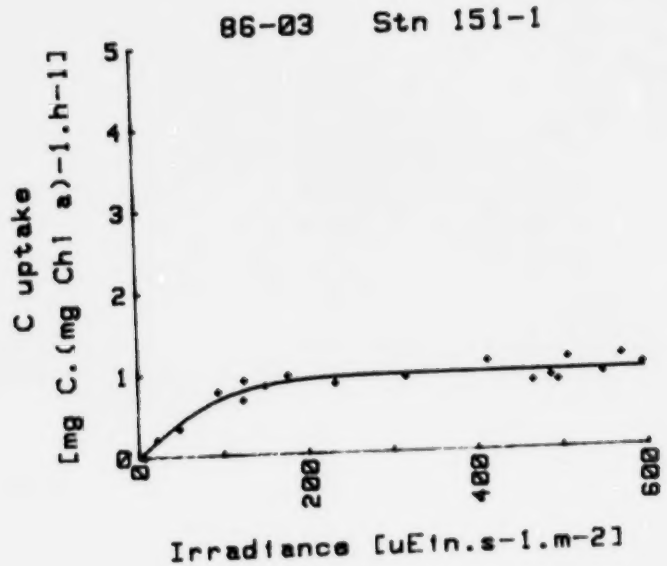
Parameter estimates: Derived parameters:

Pm = 0.96 Im = 471.5
a = 0.009 Ik = 101.2

n = 19 r = 0.916 (15 d.f.)


86-03 Stn 150-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-03 Stn 150-8


86-03 Stn 151-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.30
Station: 152-2 Time: 1549 (LAT)
1714 (PDT)
Depth: 13.7 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.14 Im = 272.2
a = 0.028 Ik = 76.2

n = 25 r = 0.918 (21 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 152-3 Time: 1549 (LAT)
1714 (PDT)
Depth: 2.2 m
Chlor a: 1.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.97 Im = 596.8
a = 0.020 Ik = 151.7

n = 24 r = 0.546 (20 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 153-1 Time: 1743 (LAT)
1908 (PDT)
Depth: 12.7 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.27 Im = 255.4
a = 0.031 Ik = 73.4

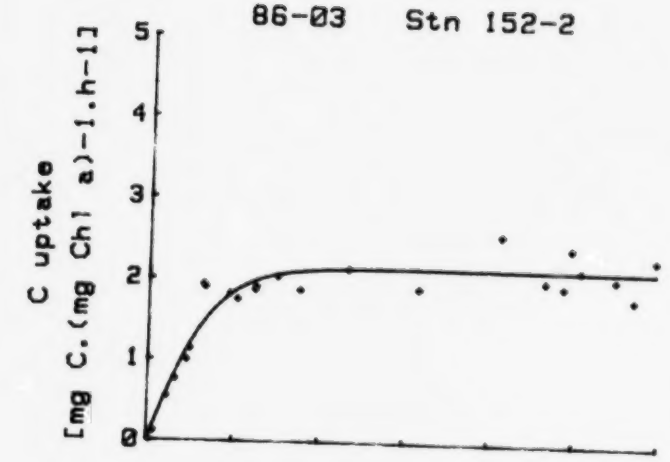
n = 25 r = 0.909 (21 d.f.)

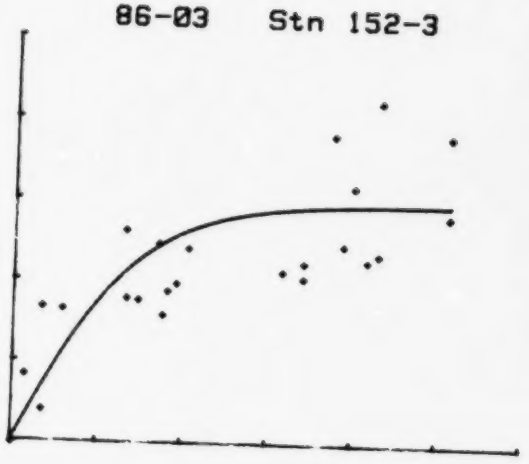
Cruise: 86-03 Date: 86.06.30
Station: 153-2 Time: 1743 (LAT)
1908 (PDT)
Depth: 5.3 m
Chlor a: 1.0 mg.m-3

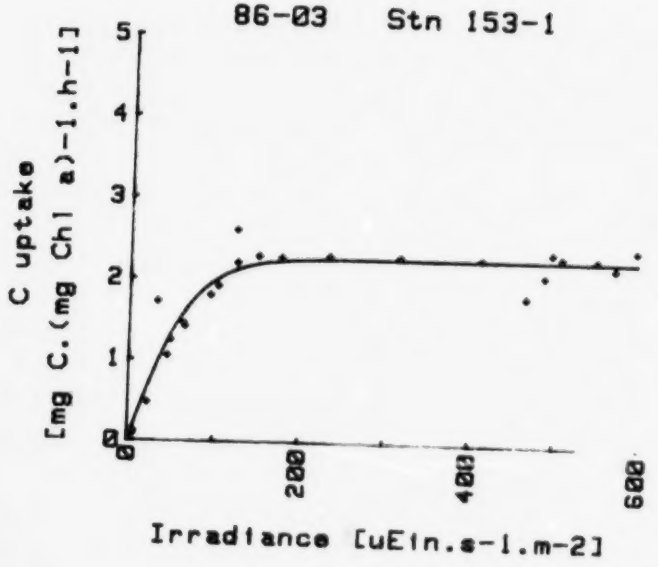
Parameter estimates: Derived parameters:

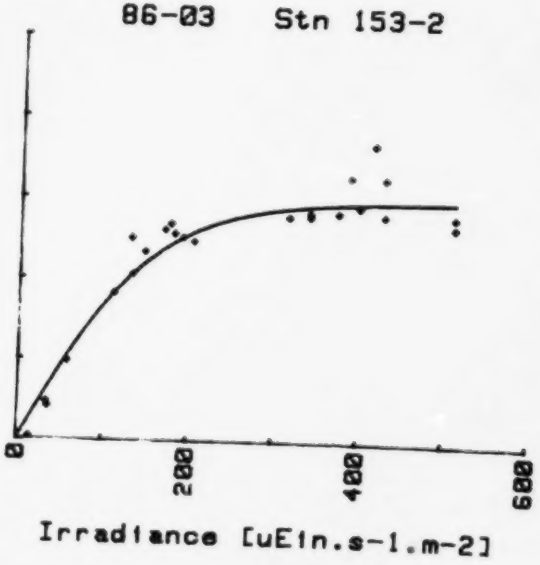
Pm = 2.99 Im = 630.0
a = 0.019 Ik = 158.7

n = 24 r = 0.925 (20 d.f.)


86-03 Stn 152-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-03 Stn 152-3


86-03 Stn 153-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-03 Stn 153-2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.06.30
Station: 154-1 Time: 1944 (LAT)
2109 (PDT)
Depth: 10.9 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.20 Im = 310.8
a = 0.016 Ik = 75.1

n = 25 r = 0.991 (21 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 154-2 Time: 1944 (LAT)
2109 (PDT)
Depth: 2.4 m
Chlor a: 1.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.07 Im = 352.4
a = 0.013 Ik = 81.3

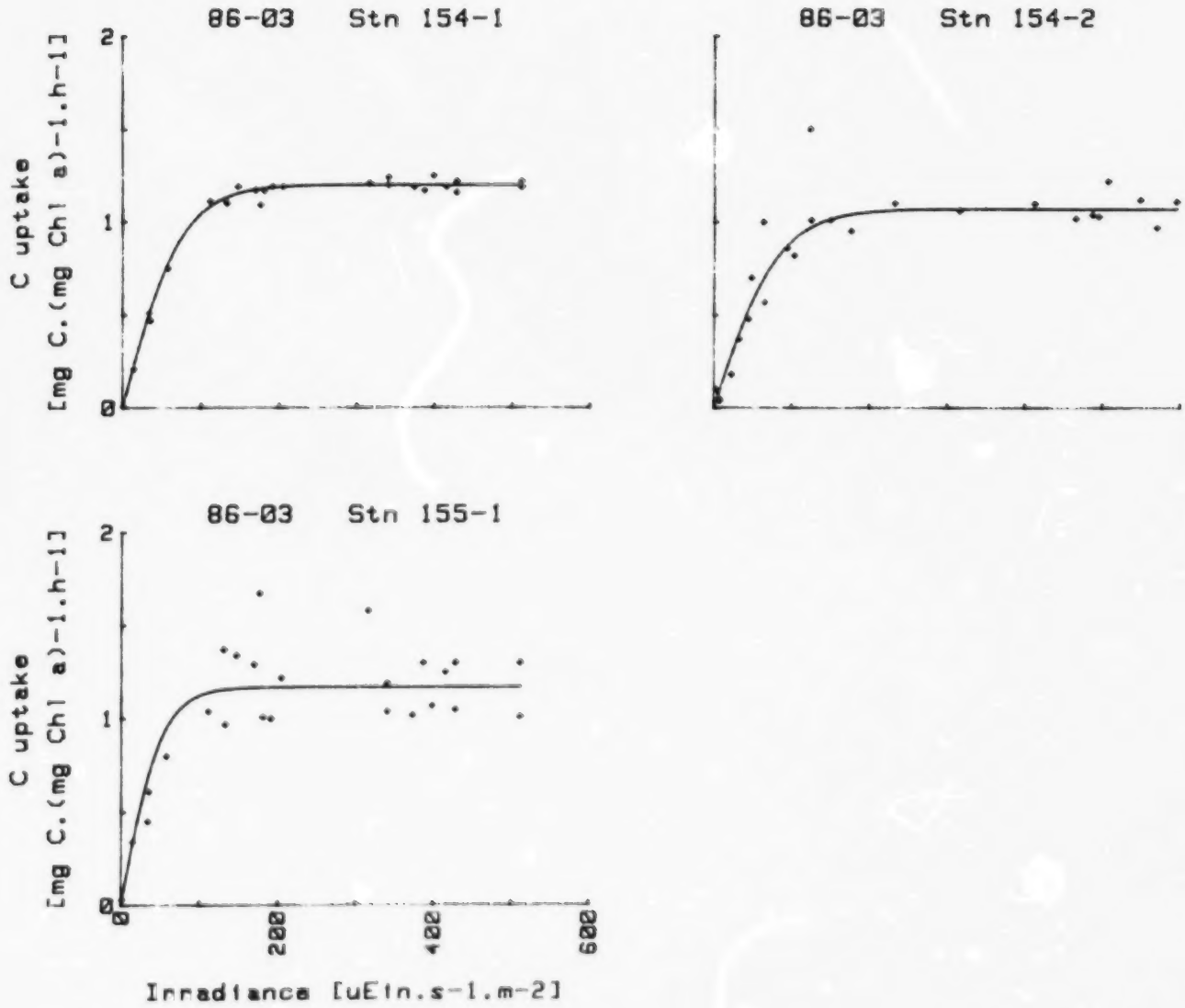
n = 25 r = 0.863 (21 d.f.)

Cruise: 86-03 Date: 86.06.30
Station: 155-1 Time: 2150 (LAT)
2315 (PDT)
Depth: 16.7 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.17 Im = 195.7
a = 0.023 Ik = 51.6

n = 25 r = 0.738 (21 d.f.)


86-03 Stn 154-1
86-03 Stn 154-2
86-03 Stn 155-1
C uptake
[mg C.(mg Chl a)-1.h-1]
2
1
0
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.07.01
Station: 156-7 Time: 2351 (LAT)
0116 (PDT)
Depth: 17.6 m
Chlor a: 1.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.18 Im = 67.6
a = 0.052 Ik = 22.8

n = 24 r = 0.723 (20 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 156-8 Time: 2351 (LAT)
0116 (PDT)
Depth: 6.5 m
Chlor a: 0.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.59 Im = 512.9
a = 0.013 Ik = 118.9

n = 24 r = 0.489 (20 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 157-1 Time: 0149 (LAT)
0314 (PDT)
Depth: 15.7 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.56 Im = 641.5
a = 0.005 Ik = 119.7

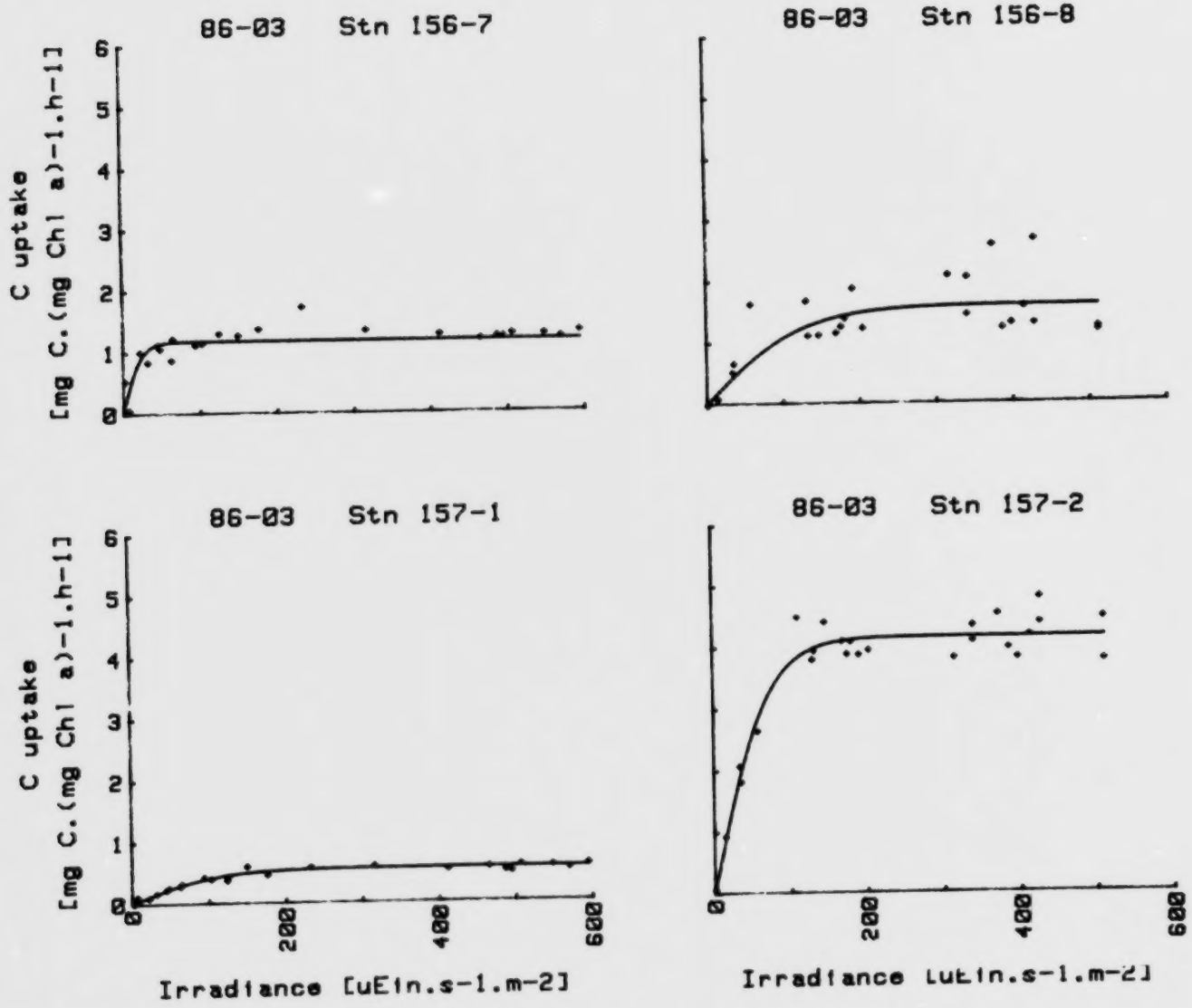
n = 25 r = 0.941 (21 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 157-2 Time: 0149 (LAT)
0314 (PDT)
Depth: 5.3 m
Chlor a: 0.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.17 Im = 193.7
a = 0.060 Ik = 69.0

n = 25 r = 0.938 (21 d.f.)


86-03 Stn 156-7
86-03 Stn 156-8
86-03 Stn 157-1
86-03 Stn 157-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.07.01
Station: 156-7 Time: 2351 (LAT)
0116 (PDT)
Depth: 17.6 m
Chlor a: 1.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.59 Im = 512.9
a = 0.013 Ik = 118.9

n = 24 r = 0.489 (20 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 157-1 Time: 0149 (LAT)
0314 (PDT)
Depth: 15.7 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.56 Im = 641.5
a = 0.005 Ik = 119.7

n = 25 r = 0.941 (21 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 157-2 Time: 0149 (LAT)
0314 (PDT)
Depth: 5.3 m
Chlor a: 0.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.17 Im = 193.7
a = 0.060 Ik = 69.0

n = 25 r = 0.938 (21 d.f.)

86-03 Stn 156-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6

86-03 Stn 157-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
200
400
600
Irradiance [uEin.s-1.m-2]

86-03 Stn 157-2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-03 Date: 86.07.01
Station: 158-1 Time: 0349 (LAT)
0514 (PDT)
Depth: 14.8 m
Chlor a: 2.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.61 Im = 644.6
a = 0.005 Ik = 121.6

n = 25 r = 0.980 (21 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 158-2 Time: 0349 (LAT)
0514 (PDT)
Depth: 5.4 m
Chlor a: 0.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 6.85 Im = 261.5
a = 0.070 Ik = 98.2

n = 25 r = 0.969 (21 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 159-6 Time: 0547 (LAT)
0712 (PDT)
Depth: 19.5 m
Chlor a: 0.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.47 Im = 288.7
a = 0.030 Ik = 82.3

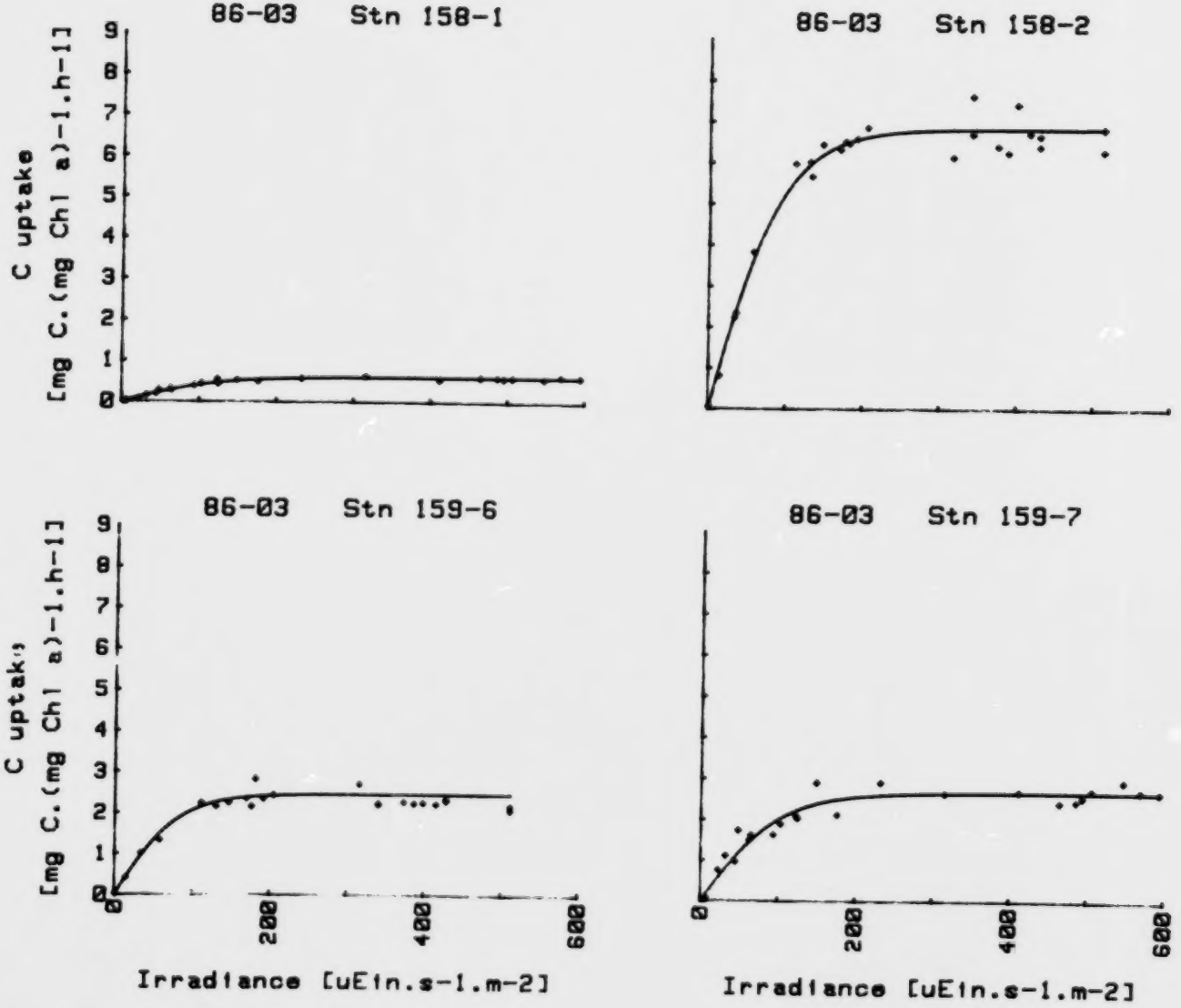
n = 23 r = 0.906 (19 d.f.)

Cruise: 86-03 Date: 86.07.01
Station: 159-7 Time: 0547 (LAT)
0712 (PDT)
Depth: 6.2 m
Chlor a: 0.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.65 Im = 375.8
a = 0.026 Ik = 102.8

n = 25 r = 0.931 (21 d.f.)


86-03 Stn 158-1
86-03 Stn 158-2
86-03 Stn 159-6
86-03 Stn 159-7
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
6
7
8
9
200
400
600

Cruise 86-04: Station data, fitted and derived parameters, plots.

Cruise: 86-04 Date: 86.08.20
Station: 24-8 Time: 0805 (LAT)
0935 (PDT)
Depth: 5.2 m
Chlor a: 7.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 7.16 Im = 688.4
a = 0.035 Ik = 205.2

n = 25 r = 0.991 (21 d.f.)

Cruise: 86-04 Date: 86.08.20
Station: 24-9 Time: 0805 (LAT)
0935 (PDT)
Depth: 2.2 m
Chlor a: 7.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 6.94 Im = 710.9
a = 0.033 Ik = 208.8

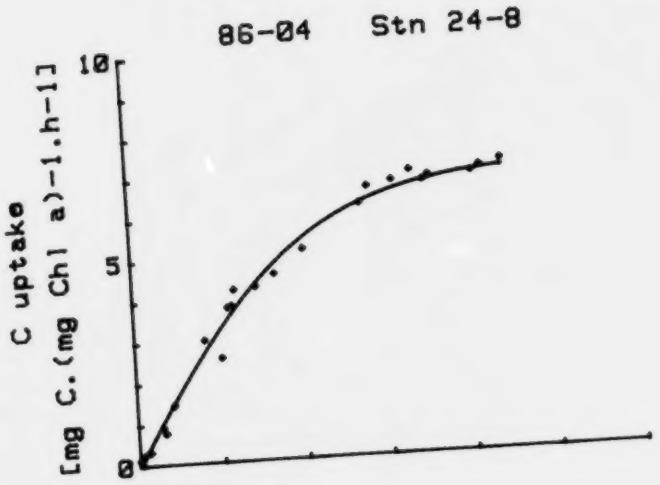
n = 25 r = 0.992 (21 d.f.)

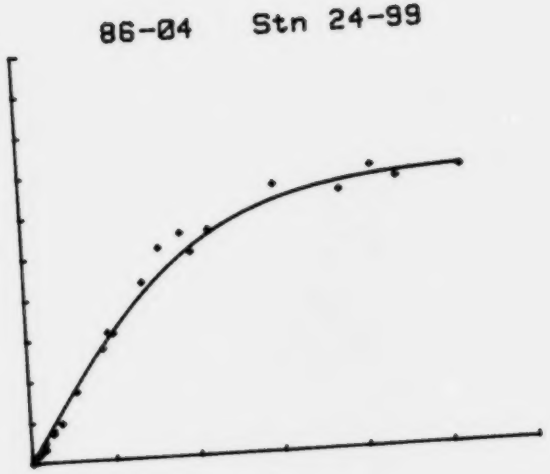
Cruise: 86-04 Date: 86.08.20
Station: 26-1 Time: 1303 (LAT)
1433 (PDT)
Depth: 15.5 m
Chlor a: 9.5 mg.m-3

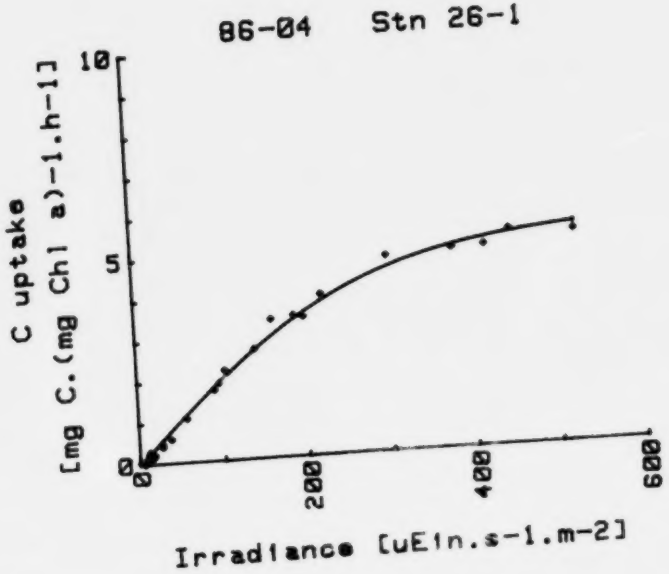
Parameter estimates: Derived parameters:

Pm = 5.61 Im = 1042.6
a = 0.021 Ik = 269.3

n = 25 r = 0.994 (21 d.f.)


86-04 Stn 24-8
C uptake
[mg C.(mg Chl a)-1.h-1]
10
5
0


86-04 Stn 24-99


86-04 Stn 26-1
C uptake
[mg C.(mg Chl a)-1.h-1]
10
5
0
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.20
Station: 27-3 Time: 1440 (LAT)
1610 (PDT)
Depth: 6.2 m
Chlor a: 25.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.29 Im = 713.2
a = 0.018 Ik = 178.5

n = 25 r = 0.988 (21 d.f.)

Cruise: 86-04 Date: 86.08.20
Station: 27-4 Time: 1440 (LAT)
1610 (PDT)
Depth: 1.9 m
Chlor a: 23.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.67 Im = 997.2
a = 0.015 Ik = 238.8

n = 25 r = 0.988 (21 d.f.)

Cruise: 86-04 Date: 86.08.20
Station: 28-7 Time: 1634 (LAT)
1804 (PDT)
Depth: 12.9 m
Chlor a: 23.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.46 Im = 458.3
a = 0.021 Ik = 118.3

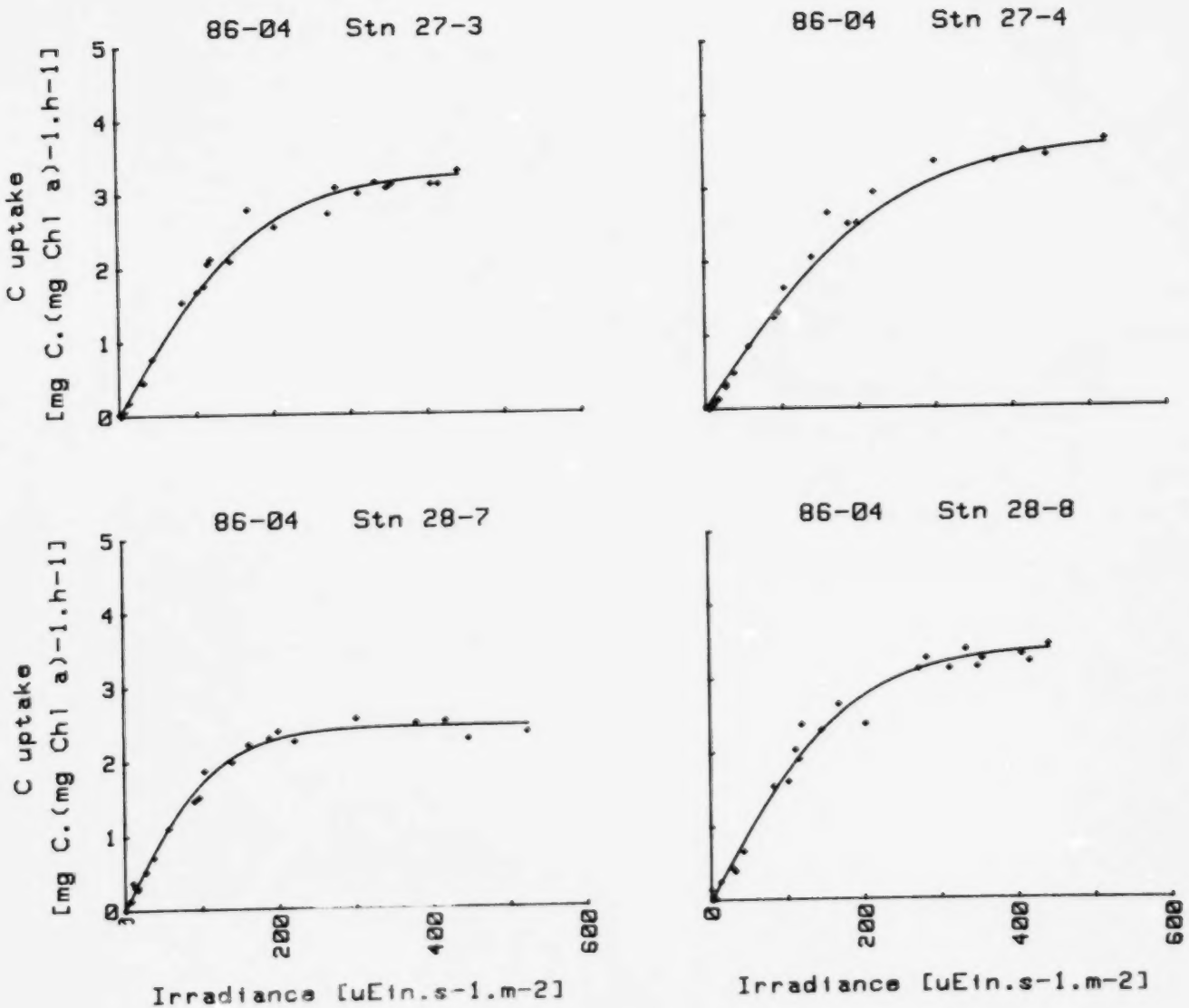
n = 25 r = 0.991 (21 d.f.)

Cruise: 86-04 Date: 86.08.20
Station: 28-8 Time: 1634 (LAT)
1804 (PDT)
Depth: 7.3 m
Chlor a: 25.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.43 Im = 715.1
a = 0.019 Ik = 180.5

n = 25 r = 0.985 (21 d.f.)


86-04 Stn 27-3
86-04 Stn 27-4
86-04 Stn 28-7
86-04 Stn 28-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
200
400
600

Cruise: 86-04 Date: 86.08.20
Station: 29-2 Time: 1837 (LAT)
2007 (PDT)
Depth: 6.2 m
Chlor a: 17.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.33 Im = 523.5
a = 0.024 Ik = 140.0

n = 25 r = 0.992 (21 d.f.)

Cruise: 86-04 Date: 86.08.20
Station: 29-3 Time: 1837 (LAT)
2007 (PDT)
Depth: 2.4 m
Chlor a: 18.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.37 Im = 629.9
a = 0.021 Ik = 162.5

n = 25 r = 0.991 (21 d.f.)

Cruise: 86-04 Date: 86.08.20
Station: 30-1 Time: 2036 (LAT)
2206 (PDT)
Depth: 13.6 m
Chlor a: 20.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.10 Im = 562.5
a = 0.016 Ik = 135.1

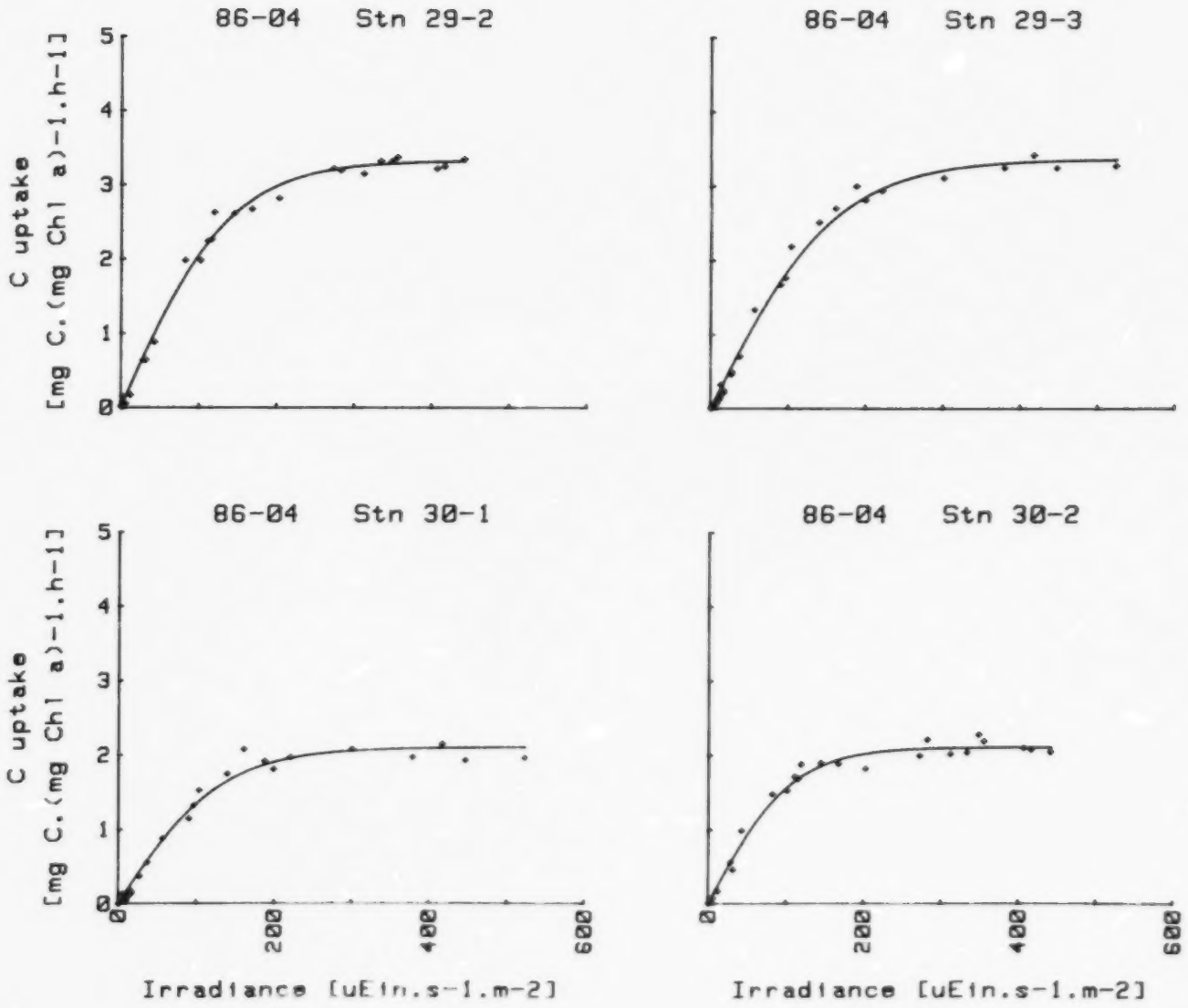
n = 25 r = 0.981 (21 d.f.)

Cruise: 86-04 Date: 86.08.20
Station: 30-2 Time: 2036 (LAT)
2206 (PDT)
Depth: 5.4 m
Chlor a: 19.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.11 Im = 410.8
a = 0.020 Ik = 105.2

n = 25 r = 0.985 (21 d.f.)


86-04 Stn 29-2
86-04 Stn 29-3
86-04 Stn 30-1
86-04 Stn 30-2
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
200
400
600

Cruise: 86-04 Date: 86.08.21
Station: 31-8 Time: 2246 (LAT)
0016 (PDT)
Depth: 7.0 m
Chlor a: 17.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.14 Im = 326.5
a = 0.024 Ik = 87.9

n = 25 r = 0.983 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 32-1 Time: 0108 (LAT)
0238 (PDT)
Depth: 14.7 m
Chlor a: 15.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.92 Im = 524.5
a = 0.021 Ik = 136.4

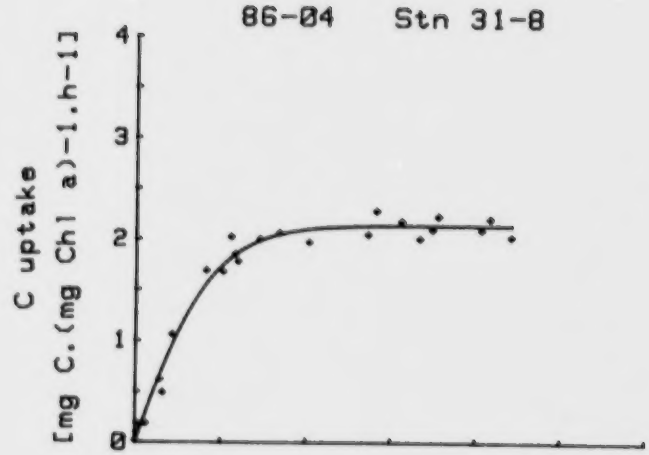
n = 25 r = 0.981 (21 d.f.)

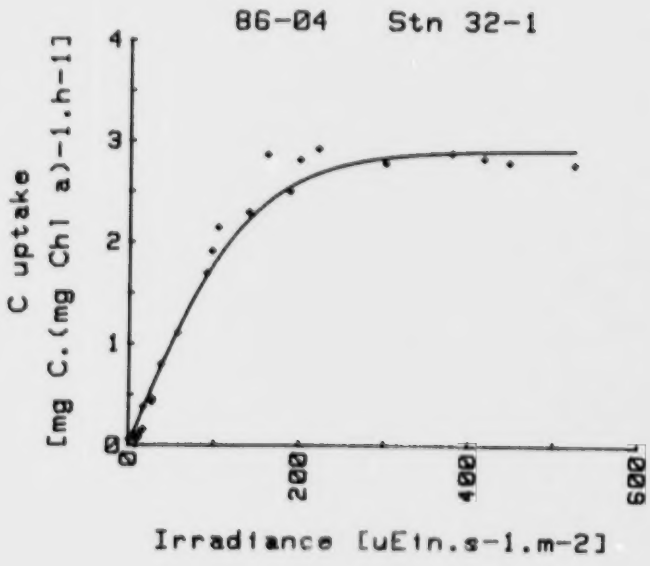
Cruise: 86-04 Date: 86.08.21
Station: 32-2 Time: 0108 (LAT)
0238 (PDT)
Depth: 6.3 m
Chlor a: 16.7 mg.m-3

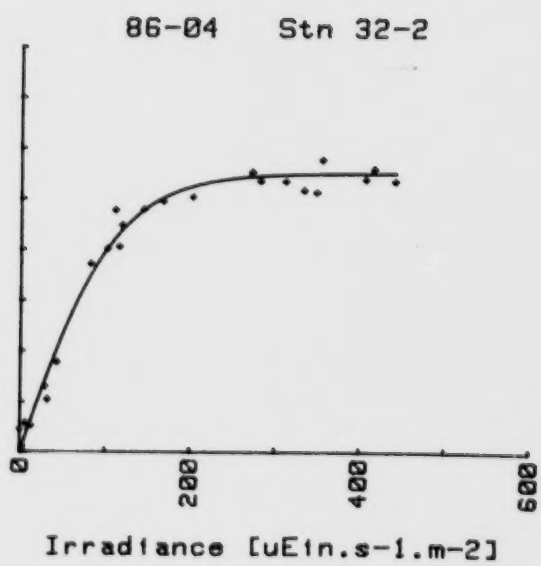
Parameter estimates: Derived parameters:

Pm = 2.76 Im = 400.9
a = 0.025 Ik = 109.1

n = 25 r = 0.985 (21 d.f.)


86-04 Stn 31-8
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4


86-04 Stn 32-1
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-04 Stn 32-2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.21
Station: 33-2 Time: 0239 (LAT)
0409 (PDT)
Depth: 7.7 m
Chlor a: 17.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.07 Im = 535.9
a = 0.022 Ik = 140.2

n = 25 r = 0.985 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 33-3 Time: 0239 (LAT)
0409 (PDT)
Depth: 2.0 m
Chlor a: 17.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.07 Im = 627.3
a = 0.019 Ik = 158.9

n = 25 r = 0.990 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 34-7 Time: 0450 (LAT)
0620 (PDT)
Depth: 13.7 m
Chlor a: 14.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.67 Im = 696.4
a = 0.020 Ik = 179.1

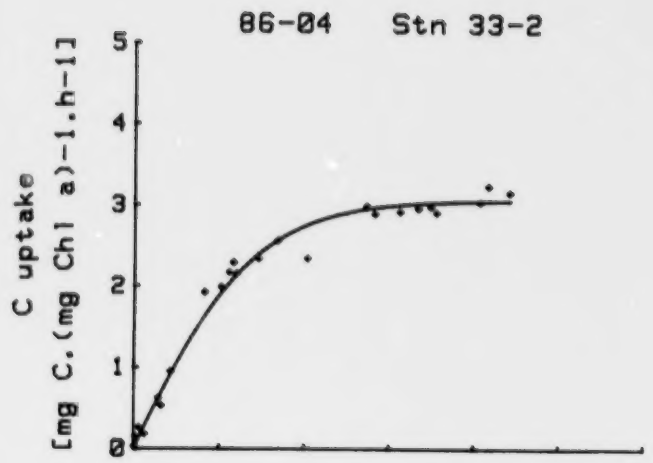
n = 25 r = 0.990 (21 d.f.)

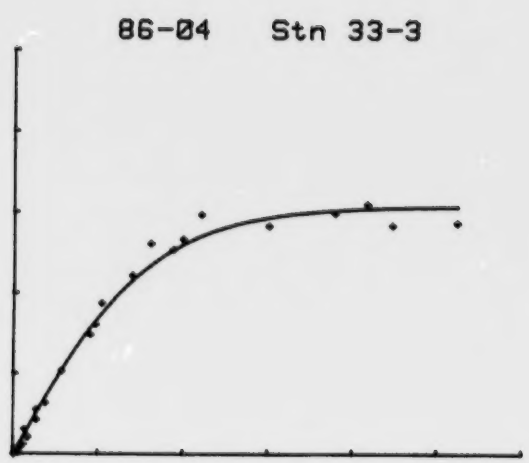
Cruise: 86-04 Date: 86.08.21
Station: 34-8 Time: 0450 (LAT)
0620 (PDT)
Depth: 7.0 m
Chlor a: 15.1 mg.m-3

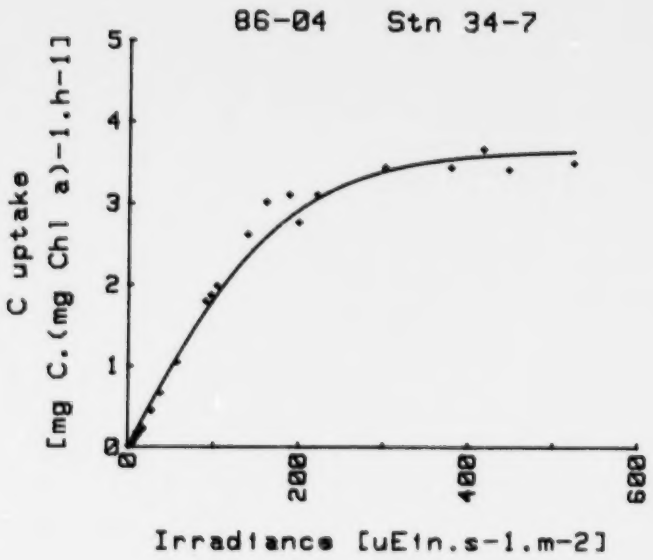
Parameter estimates: Derived parameters:

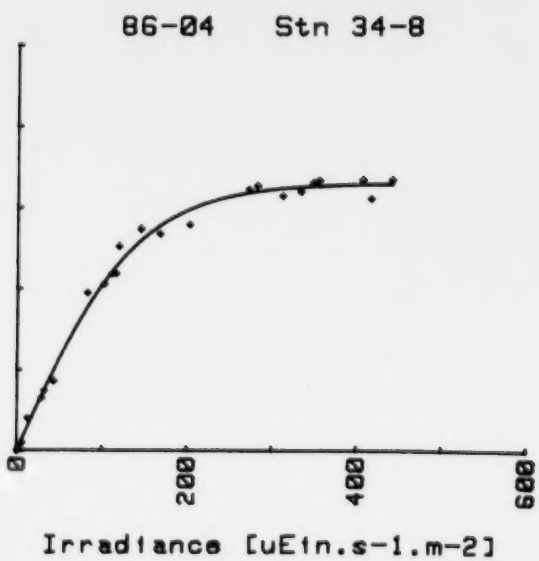
Pm = 3.31 Im = 502.4
a = 0.024 Ik = 135.4

n = 25 r = 0.993 (21 d.f.)


86-04 Stn 33-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-04 Stn 33-3


86-04 Stn 34-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-04 Stn 34-8
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.21
Station: 35-2 Time: 0635 (LAT)
0805 (PDT)
Depth: 7.2 m
Chlor a: 16.42 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.18 Im = 574.0
a = 0.026 Ik = 158.0

n = 25 r = 0.988 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 35-3 Time: 0635 (LAT)
0805 (PDT)
Depth: 2.2 m
Chlor a: 17.00 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.32 Im = 731.4
a = 0.022 Ik = 192.6

n = 25 r = 0.990 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 36-1 Time: 0838 (LAT)
1008 (PDT)
Depth: 16.0 m
Chlor a: 17.22 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.77 Im = 764.8
a = 0.023 Ik = 203.7

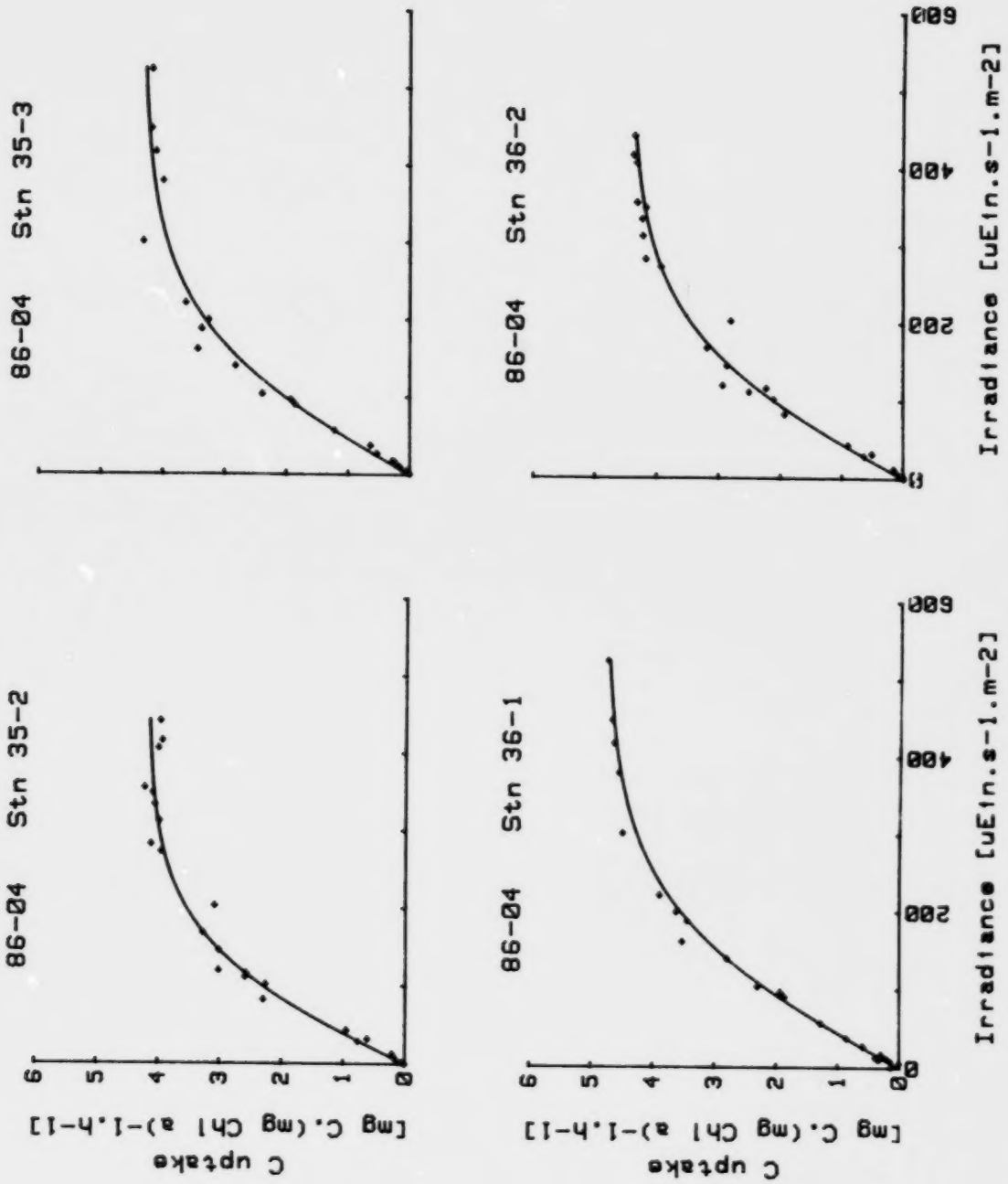
n = 25 r = 0.996 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 36-2 Time: 0838 (LAT)
1008 (PDT)
Depth: 7.1 m
Chlor a: 17.80 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.43 Im = 734.5
a = 0.023 Ik = 194.3

n = 25 r = 0.986 (21 d.f.)


86-04 Stn 35-3
86-04 Stn 36-2
86-04 Stn 35-2
86-04 Stn 36-1
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
6
200
400
600

Cruise: 86-04 Date: 86.08.21
Station: 37-8 Time: 1049 (LAT)
1219 (PDT)
Depth: 5.6 m
Chlor a: 15.84 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.40 Im = 705.3
a = 0.027 Ik = 196.2

n = 25 r = 0.982 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 37-9 Time: 1049 (LAT)
1219 (PDT)
Depth: 2.2 m
Chlor a: 16.18 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.89 Im = 906.0
a = 0.024 Ik = 243.4

n = 25 r = 0.990 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 38-1 Time: 1239 (LAT)
1409 (PDT)
Depth: 15.5 m
Chlor a: 14.44 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.55 Im = 617.6
a = 0.031 Ik = 178.1

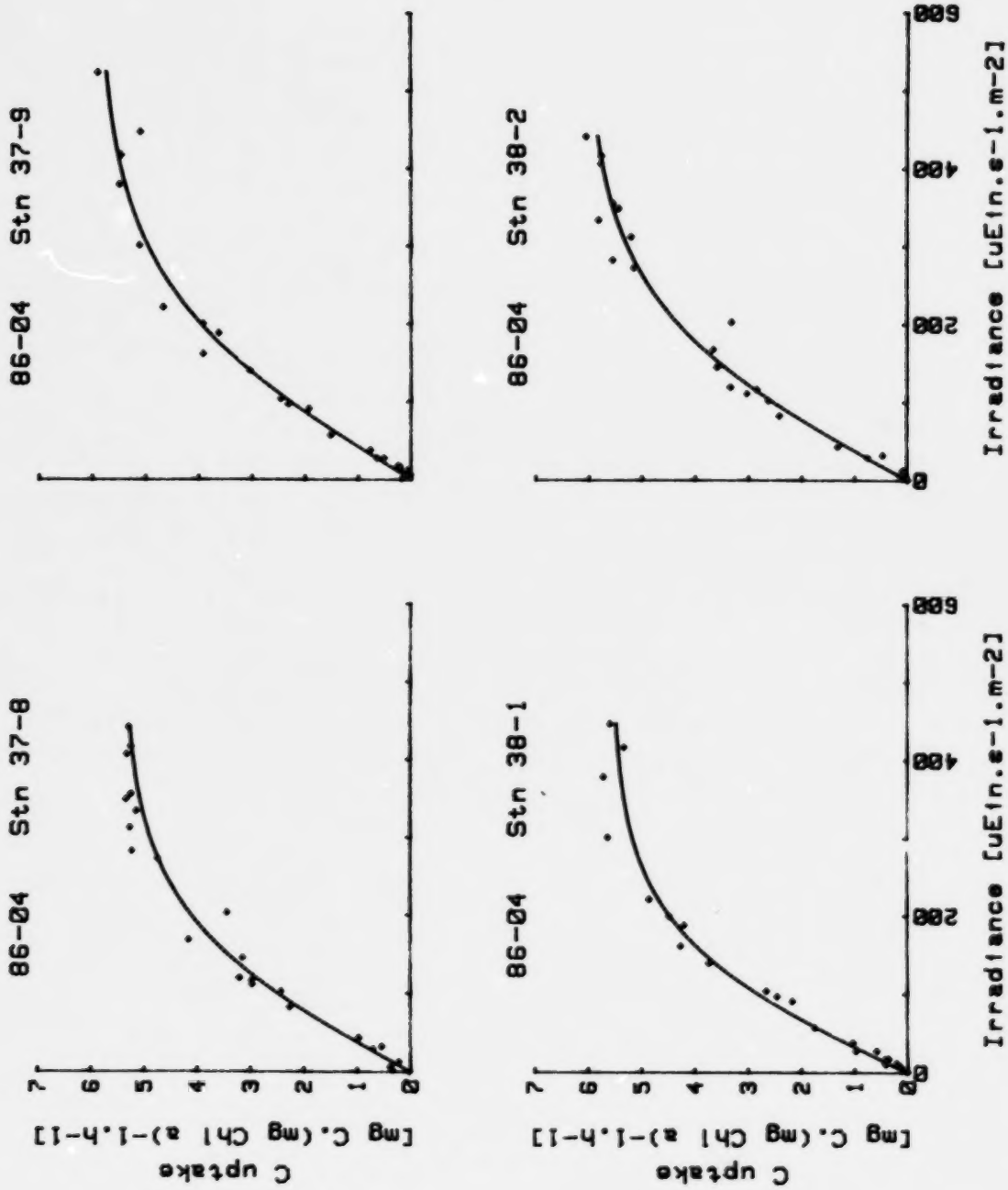
n = 25 r = 0.925 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 38-2 Time: 1239 (LAT)
1409 (PDT)
Depth: 6.1 m
Chlor a: 17.04 mg.m-3

Parameter estimates: Derived parameters:

Pm = 6.05 Im = 800.2
a = 0.027 Ik = 222.1

n = 25 r = 0.982 (21 d.f.)


86-04 Stn 37-9
86-04 Stn 38-2
86-04 Stn 37-8
86-04 Stn 38-1
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.e-1.m-2]
0
1
2
3
4
5
6
7
200
400
600

Cruise: 86-04 Date: 86.08.21
Station: 39-2 Time: 1431 (LAT)
1601 (PDT)
Depth: 6.7 m
Chlor a: 15.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 6.87 Im = 768.5
a = 0.031 Ik = 221.3

n = 25 r = 0.847 (21 d.f.)

Cruise: 86-04 Date: 86.08.21
Station: 40-8 Time: 1658 (LAT)
1828 (PDT)
Depth: 6.5 m
Chlor a: 18.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.88 Im = 669.4
a = 0.026 Ik = 184.3

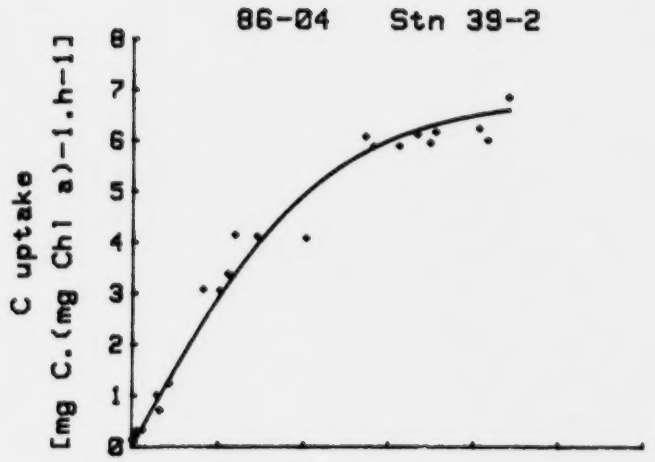
n = 25 r = 0.984 (21 d.f.)

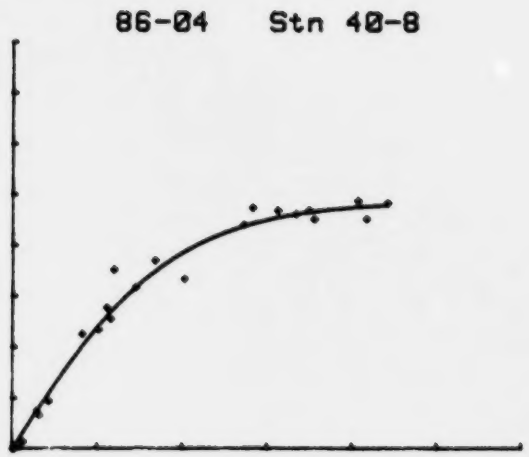
Cruise: 86-04 Date: 86.08.21
Station: 41-2 Time: 1838 (LAT)
2008 (PDT)
Depth: 6.2 m
Chlor a: 14.7 mg.m-3

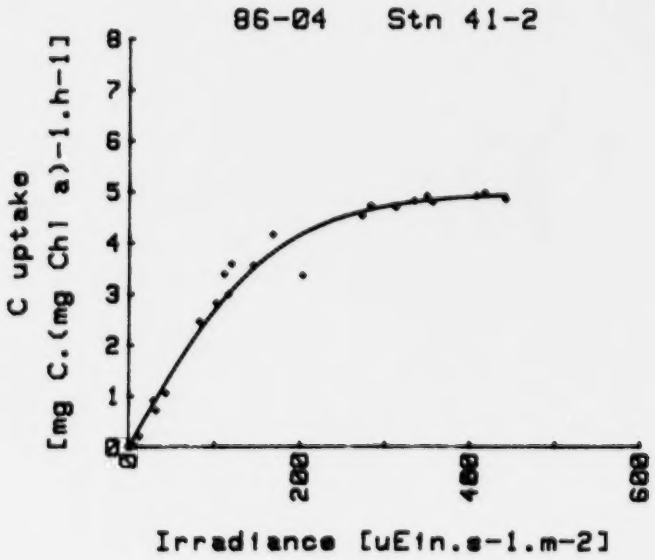
Parameter estimates: Derived parameters:

Pm = 4.99 Im = 579.4
a = 0.030 Ik = 165.5

n = 25 r = 0.982 (21 d.f.)


86-04 Stn 39-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
7
8


86-04 Stn 40-8


86-04 Stn 41-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
7
8
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04
Station: 42-1

Date: 86.08.21
Time: 2103 (LAT)
2233 (PDT)
Depth: 14.2 m
Chlor a: 17.0 mg.m-3

Parameter estimates:

Pm = 2.74
a = 0.020

Derived parameters:

Im = 537.0
Ik = 137.2

n = 25

r = 0.987 (21 d.f.)

Cruise: 86-04
Station: 42-2

Date: 86.08.21
Time: 2103 (LAT)
2233 (PDT)
Depth: 6.2 m
Chlor a: 17.1 mg.m-3

Parameter estimates:

Pm = 2.47
a = 0.020

Derived parameters:

Im = 486.4
Ik = 124.1

n = 25

r = 0.976 (21 d.f.)

Cruise: 86-04
Station: 43-6

Date: 86.08.22
Time: 2248 (LAT)
0018 (PDT)
Depth: 44.7 m
Chlor a: 3.7 mg.m-3

Parameter estimates:

Pm = 2.61
a = 0.031

Derived parameters:

Im = 294.4
Ik = 84.6

n = 22

r = 0.820 (18 d.f.)

Cruise: 86-04
Station: 43-8

Date: 86.08.22
Time: 2248 (LAT)
0018 (PDT)
Depth: 5.6 m
Chlor a: 14.9 mg.m-3

Parameter estimates:

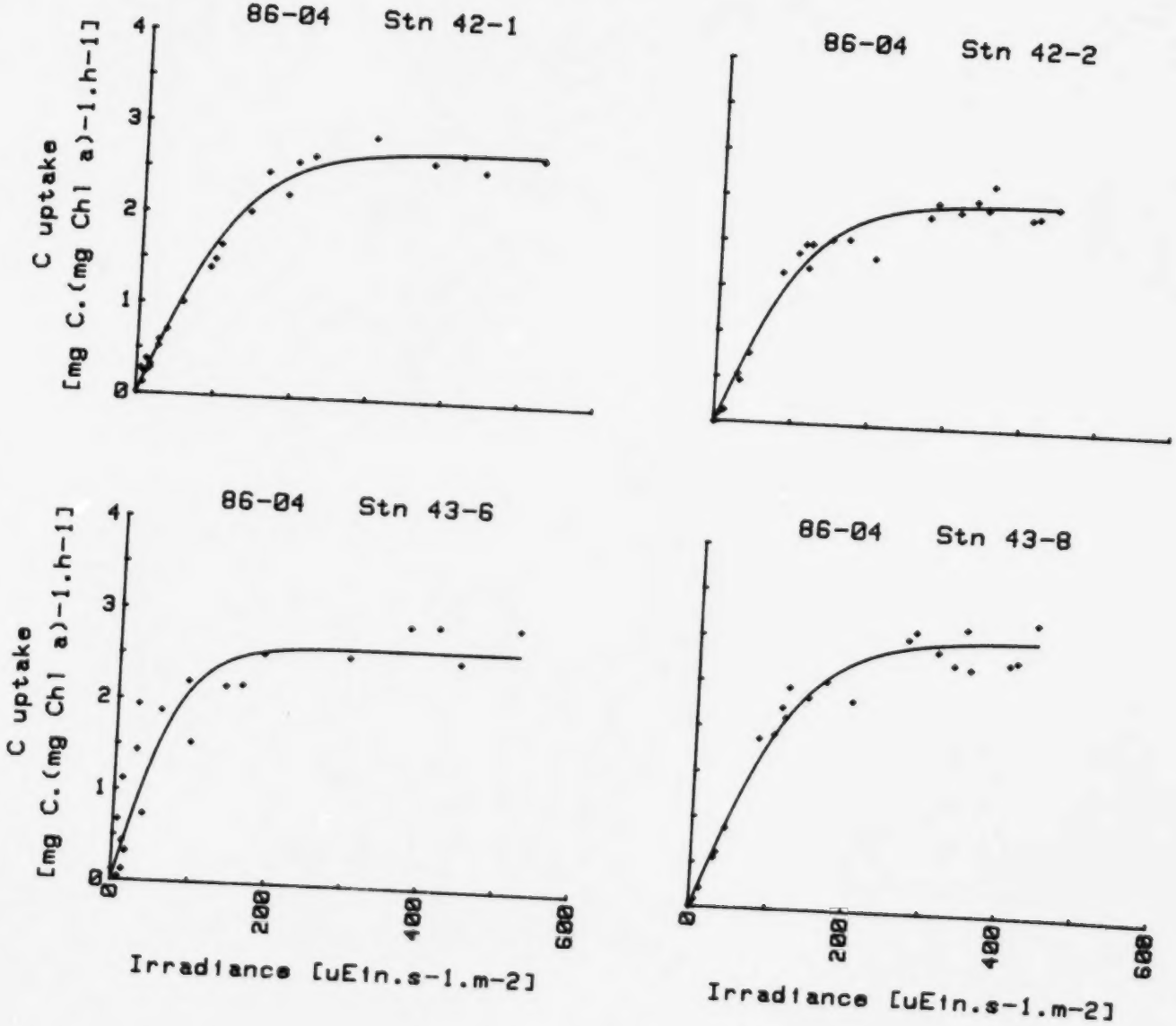
Pm = 3.03
a = 0.022

Derived parameters:

Im = 511.2
Ik = 134.7

n = 25

r = 0.976 (21 d.f.)


86-04 Stn 42-1
86-04 Stn 42-2
86-04 Stn 43-6
86-04 Stn 43-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
200
400
600

Cruise: 86-04 Date: 86.08.22
Station: 45-3 Time: 0243 (LAT)
0413 (PDT)
Depth: 6.0 m
Chlor a: 13.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.03 Im = 625.0
a = 0.024 Ik = 167.6

n = 25 r = 0.982 (21 d.f.)

Cruise: 86-04 Date: 86.08.22
Station: 45-4 Time: 0243 (LAT)
0413 (PDT)
Depth: 1.4 m
Chlor a: 14.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.28 Im = 652.9
a = 0.024 Ik = 175.7

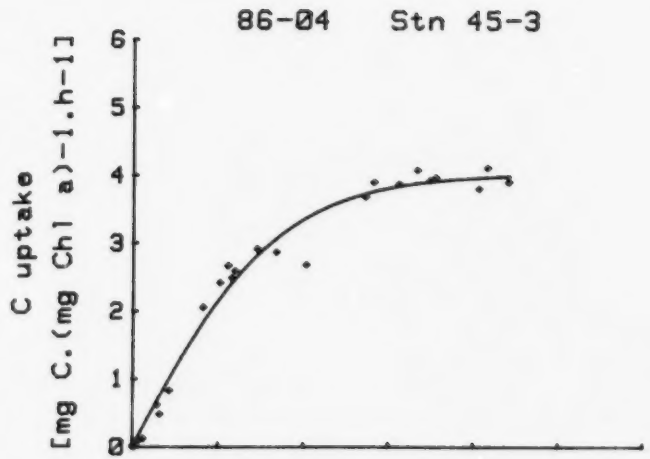
n = 25 r = 0.985 (21 d.f.)

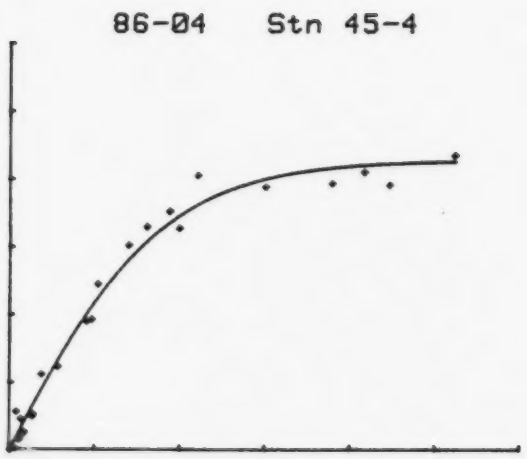
Cruise: 86-04 Date: 86.08.22
Station: 46-8 Time: 0451 (LAT)
0620 (PDT)
Depth: 6.7 m
Chlor a: 12.9 mg.m-3

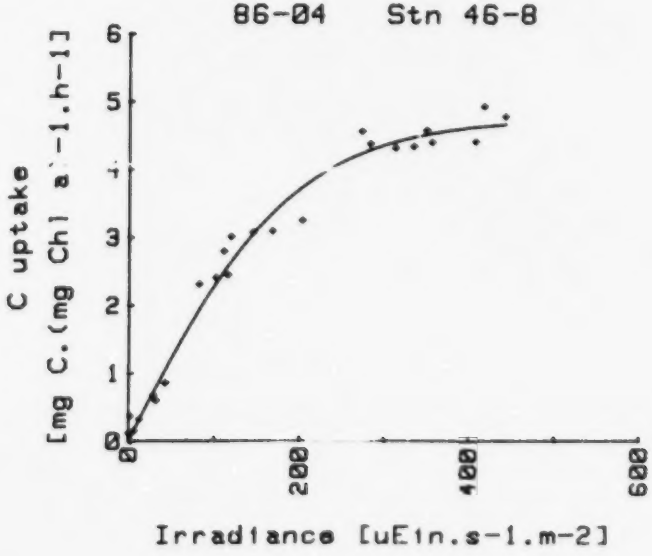
Parameter estimates: Derived parameters:

Pm = 4.76 Im = 687.8
a = 0.025 Ik = 187.3

n = 25 r = 0.983 (21 d.f.)


86-04 Stn 45-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6


86-04 Stn 45-4


86-04 Stn 46-8
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
5
6
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.22
Station: 47-2 Time: 0636 (LAT)
0805 (PDT)
Depth: 14.3 m
Chlor a: 11.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.01 Im = 682.3
a = 0.027 Ik = 188.2

n = 25 r = 0.988 (21 d.f.)

Cruise: 86-04 Date: 86.08.22
Station: 47-3 Time: 0636 (LAT)
0805 (PDT)
Depth: 7.3 m
Chlor a: 11.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.00 Im = 712.4
a = 0.026 Ik = 194.6

n = 25 r = 0.975 (21 d.f.)

Cruise: 86-04 Date: 86.08.22
Station: 48-2 Time: 0840 (LAT)
1009 (PDT)
Depth: 37.1 m
Chlor a: 3.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.58 Im = 781.3
a = 0.014 Ik = 183.2

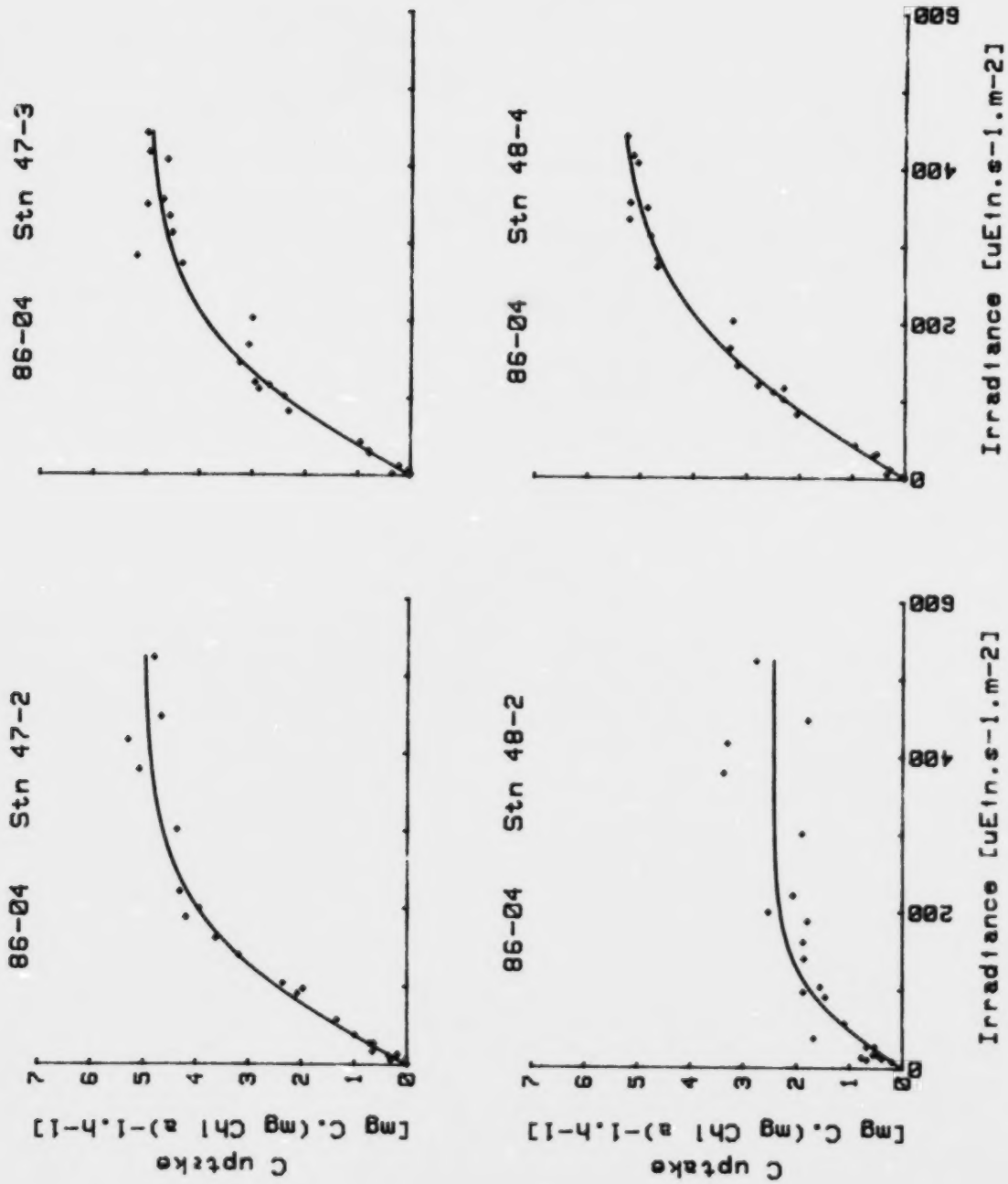
n = 23 r = 0.481 (19 d.f.)

Cruise: 86-04 Date: 86.08.22
Station: 48-4 Time: 0840 (LAT)
1009 (PDT)
Depth: 6.3 m
Chlor a: 13.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.52 Im = 873.1
a = 0.024 Ik = 233.2

n = 25 r = 0.991 (21 d.f.)


86-04 Stn 47-3
86-04 Stn 48-4
86-04 Stn 47-2
86-04 Stn 48-2
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
200
400
600
1
2
3
4
5
6
7

Cruise: 86-04 Date: 86.08.22
Station: 49-6 Time: 1100 (LAT)
1229 (PDT)
Depth: 35.3 m
Chlor a: 3.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.59 Im = 352.8
a = 0.027 Ik = 97.3

n = 25 r = 0.940 (21 d.f.)

Cruise: 86-04 Date: 86.08.22
Station: 49-8 Time: 1100 (LAT)
1229 (PDT)
Depth: 6.3 m
Chlor a: 5.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.38 Im = 804.2
a = 0.021 Ik = 208.3

n = 24 r = 0.955 (20 d.f.)

Cruise: 86-04 Date: 86.08.22
Station: 50-2 Time: 1240 (LAT)
1409 (PDT)
Depth: 14.3 m
Chlor a: 16.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.58 Im = 721.0
a = 0.024 Ik = 192.8

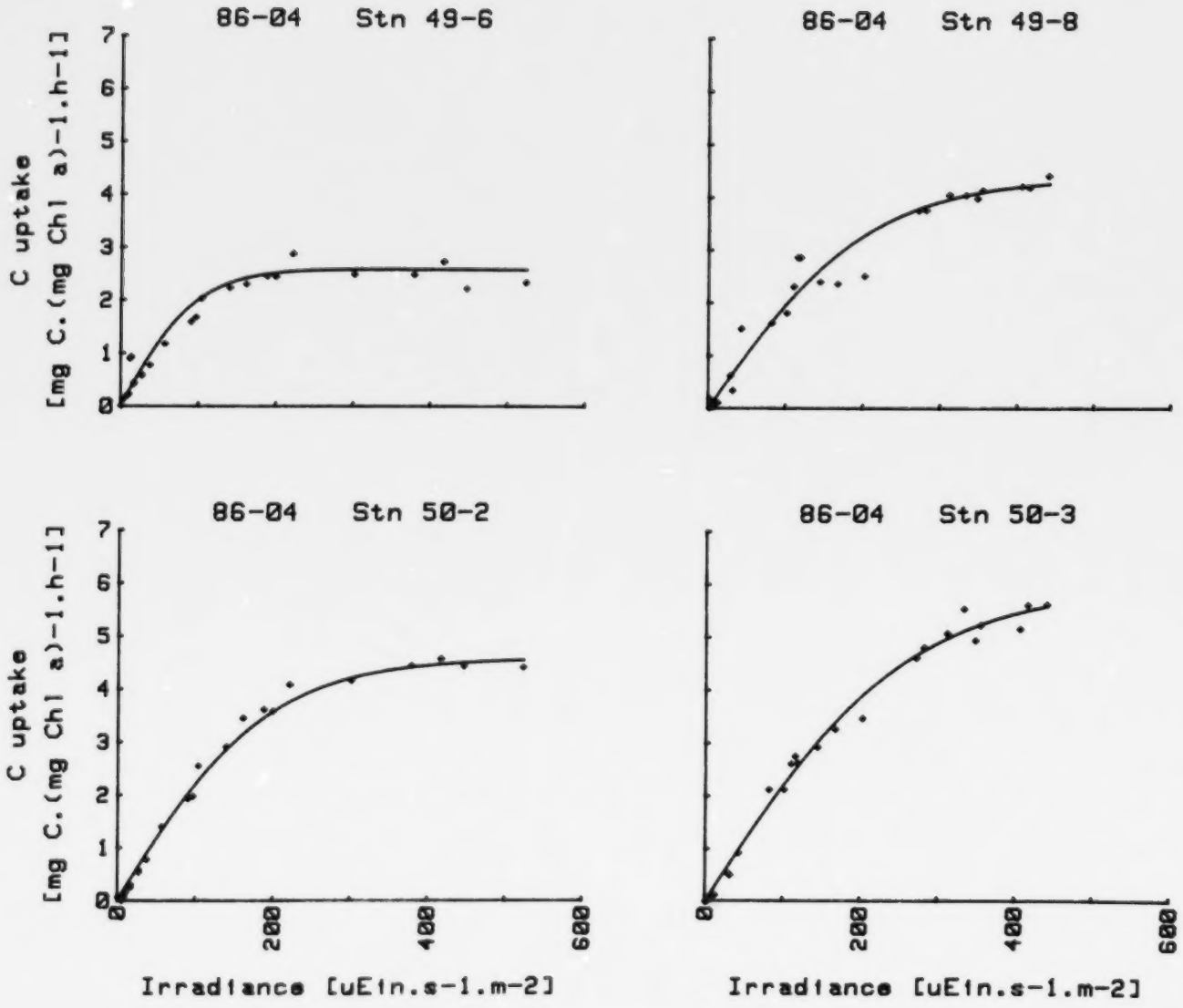
n = 25 r = 0.993 (21 d.f.)

Cruise: 86-04 Date: 86.08.22
Station: 50-3 Time: 1240 (LAT)
1409 (PDT)
Depth: 6.2 m
Chlor a: 14.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.97 Im = 987.7
a = 0.023 Ik = 261.4

n = 25 r = 0.991 (21 d.f.)


86-04 Stn 49-6
86-04 Stn 49-8
86-04 Stn 50-2
86-04 Stn 50-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
7
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.22
Station: 51-3 Time: 1422 (LAT)
1551 (PDT)
Depth: 6.5 m
Chlor a: 13.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 6.40 Im = 993.2
a = 0.024 Ik = 266.4

n = 25 r = 0.987 (21 d.f.)

Cruise: 86-4 Date: 86.08.22
Station: 51-4 Time: 1422 (LAT)
1551 (PDT)
Depth: 1.1 m
Chlor a: 10.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 7.34 Im = 1073.8
a = 0.025 Ik = 291.6

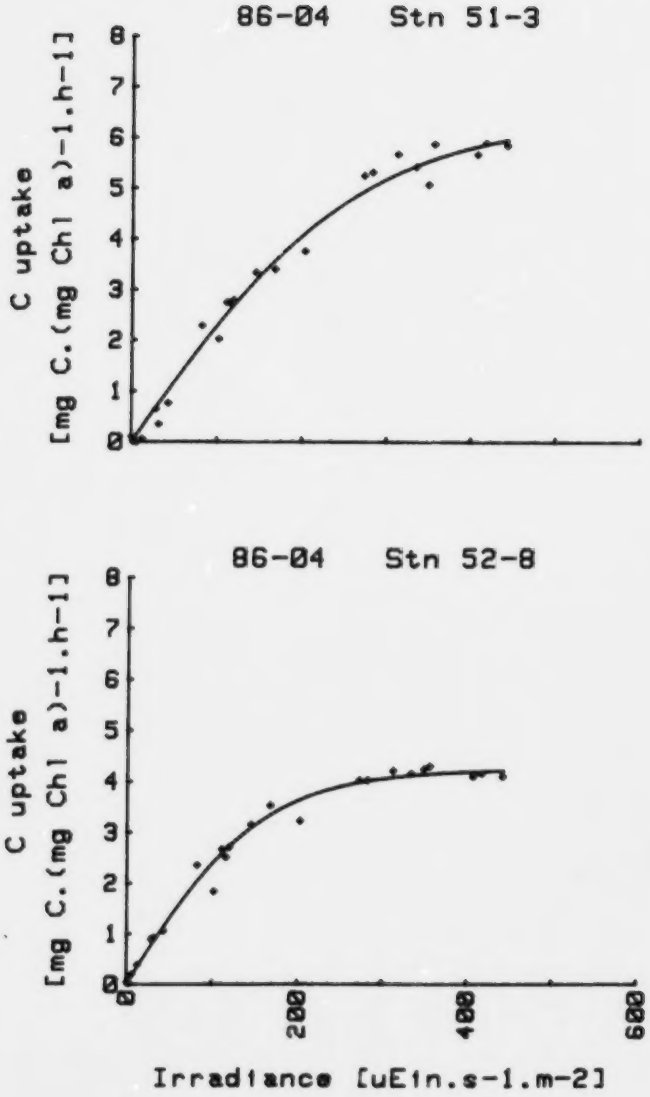
n = 25 r = 0.991 (21 d.f.)

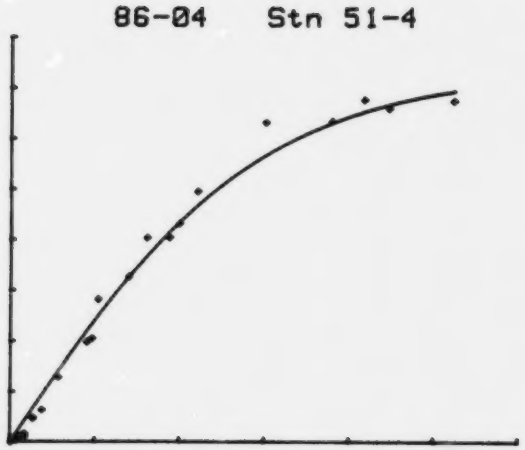
Cruise: 86-04 Date: 86.08.22
Station: 52-8 Time: 1634 (LAT)
1803 (PDT)
Depth: 5.2 m
Chlor a: 15.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.24 Im = 580.8
a = 0.027 Ik = 160.0

n = 25 r = 0.987 (21 d.f.)


86-04 Stn 51-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
7
8
86-04 Stn 52-8
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
6
7
8
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-04 Stn 51-4

Cruise: 86-04 Date: 86.08.23
Station: 53-7 Time: 0004 (LAT)
0129 (PDT)
Depth: 28.6 m
Chlor a: 3.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.28 Im = 292.8
a = 0.018 Ik = 72.5

n = 22 r = 0.964 (18 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 53-9 Time: 0004 (LAT)
0129 (PDT)
Depth: 8.7 m
Chlor a: 1.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.74 Im = 518.6
a = 0.014 Ik = 122.1

n = 20 r = 0.562 (16 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 55-8 Time: 1025 (LAT)
1151 (PDT)
Depth: 19.9 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.89 Im = 257.9
a = 0.027 Ik = 71.1

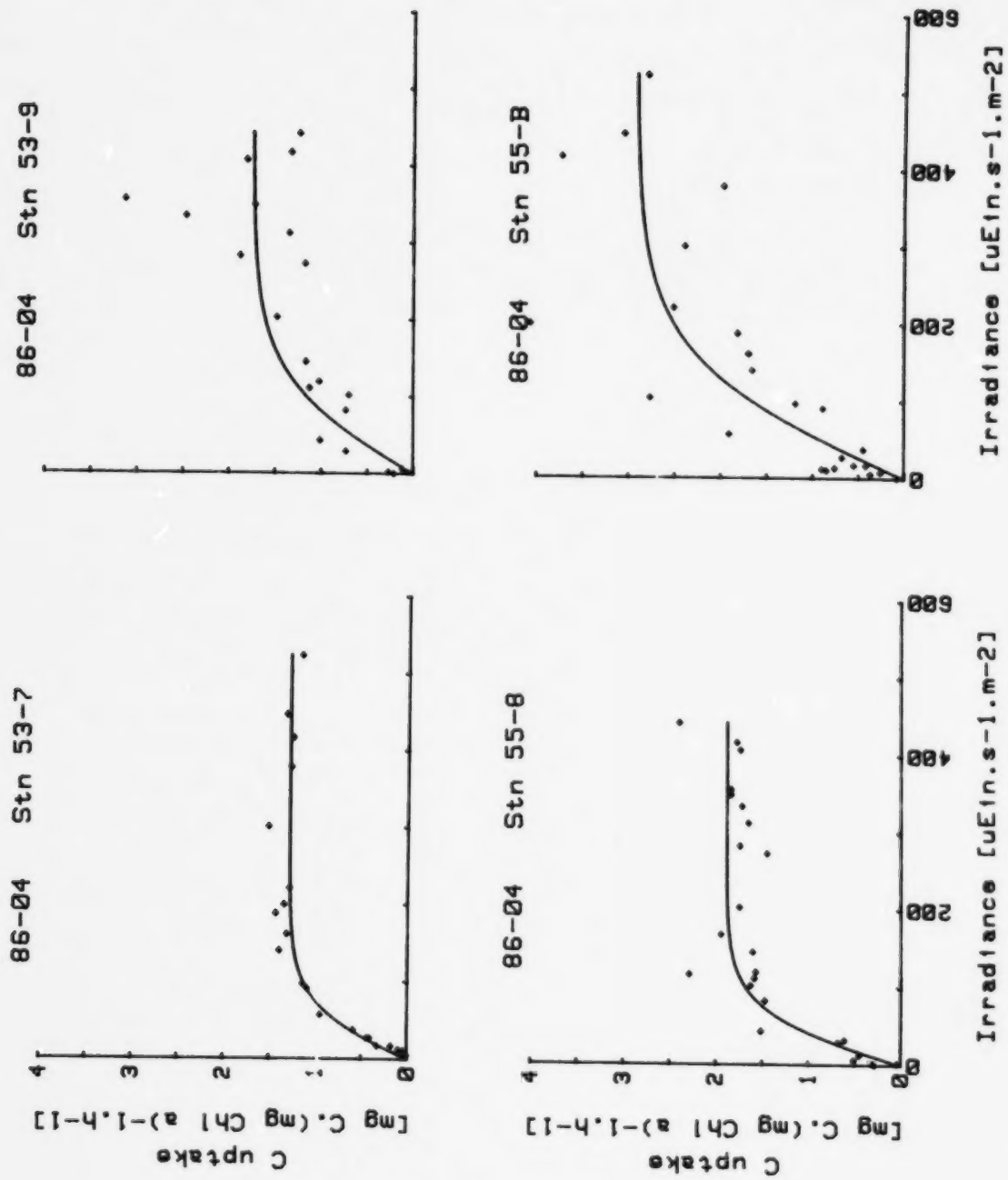
n = 25 r = 0.844 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 55-B Time: 1025 (LAT)
1151 (PDT)
Depth: 0.0 m
Chlor a: 0.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.91 Im = 601.8
a = 0.019 Ik = 152.1

n = 24 r = 0.688 (20 d.f.)


86-04 Stn 53-9
86-04 Stn 55-B
86-04 Stn 53-7
86-04 Stn 55-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
200
400
600
1
2
3
4

Cruise: 86-04 Date: 86.08.23
Station: 58-8 Time: 1300 (LAT)
1425 (PDT)
Depth: 17.4 m
Chlor a: 1.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.40 Im = 377.5
a = 0.038 Ik = 115.6

n = 25 r = 0.817 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 58-B Time: 1300 (LAT)
1425 (PDT)
Depth: 0.0 m
Chlor a: 1.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 4.46 Im = 830.7
a = 0.021 Ik = 214.5

n = 25 r = 0.738 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 61-6 Time: 1515 (LAT)
1639 (PDT)
Depth: 11.5 m
Chlor a: 3.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.59 Im = 530.9
a = 0.019 Ik = 134.4

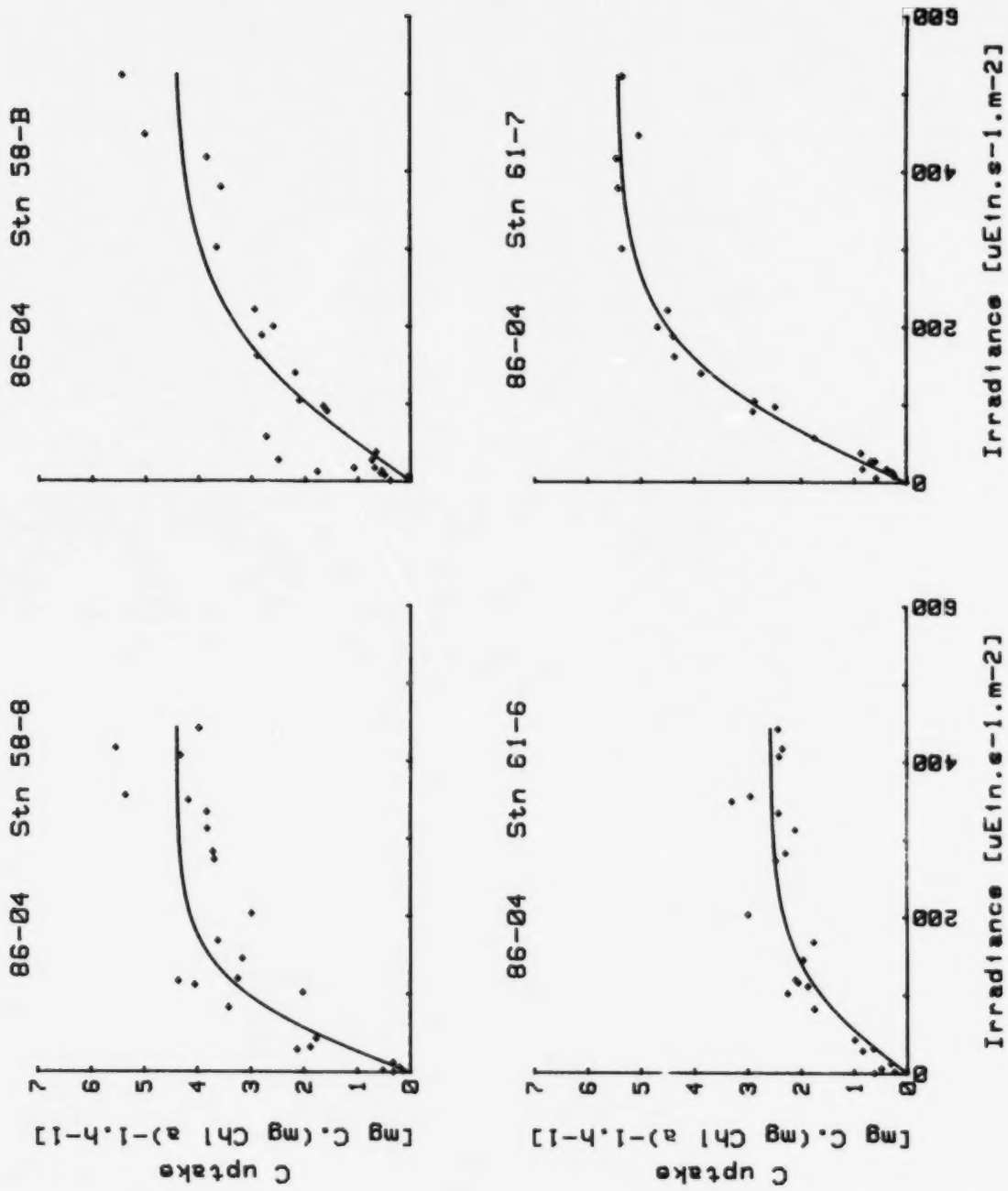
n = 25 r = 0.856 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 61-7 Time: 1515 (LAT)
1639 (PDT)
Depth: 2.9 m
Chlor a: 5.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.44 Im = 587.9
a = 0.032 Ik = 170.6

n = 25 r = 0.989 (21 d.f.)


86-04 Stn 58-B
86-04 Stn 58-8
86-04 Stn 61-7
86-04 Stn 61-6
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
200
400
600
1
2
3
4
5
6
7

Cruise: 86-04 Date: 86.08.23
Station: 63-4 Time: 1732 (LAT)
1855 (PDT)
Depth: 14.9 m
Chlor a: 16.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.12 Im = 460.9
a = 0.018 Ik = 115.4

n = 25 r = 0.985 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 63-6 Time: 1732 (LAT)
1855 (PDT)
Depth: 1.4 m
Chlor a: 17.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.66 Im = 591.2
a = 0.023 Ik = 157.2

n = 25 r = 0.986 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 66-4 Time: 2023 (LAT)
2145 (PDT)
Depth: 32.4 m
Chlor a: 5.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.36 Im = 371.5
a = 0.024 Ik = 99.3

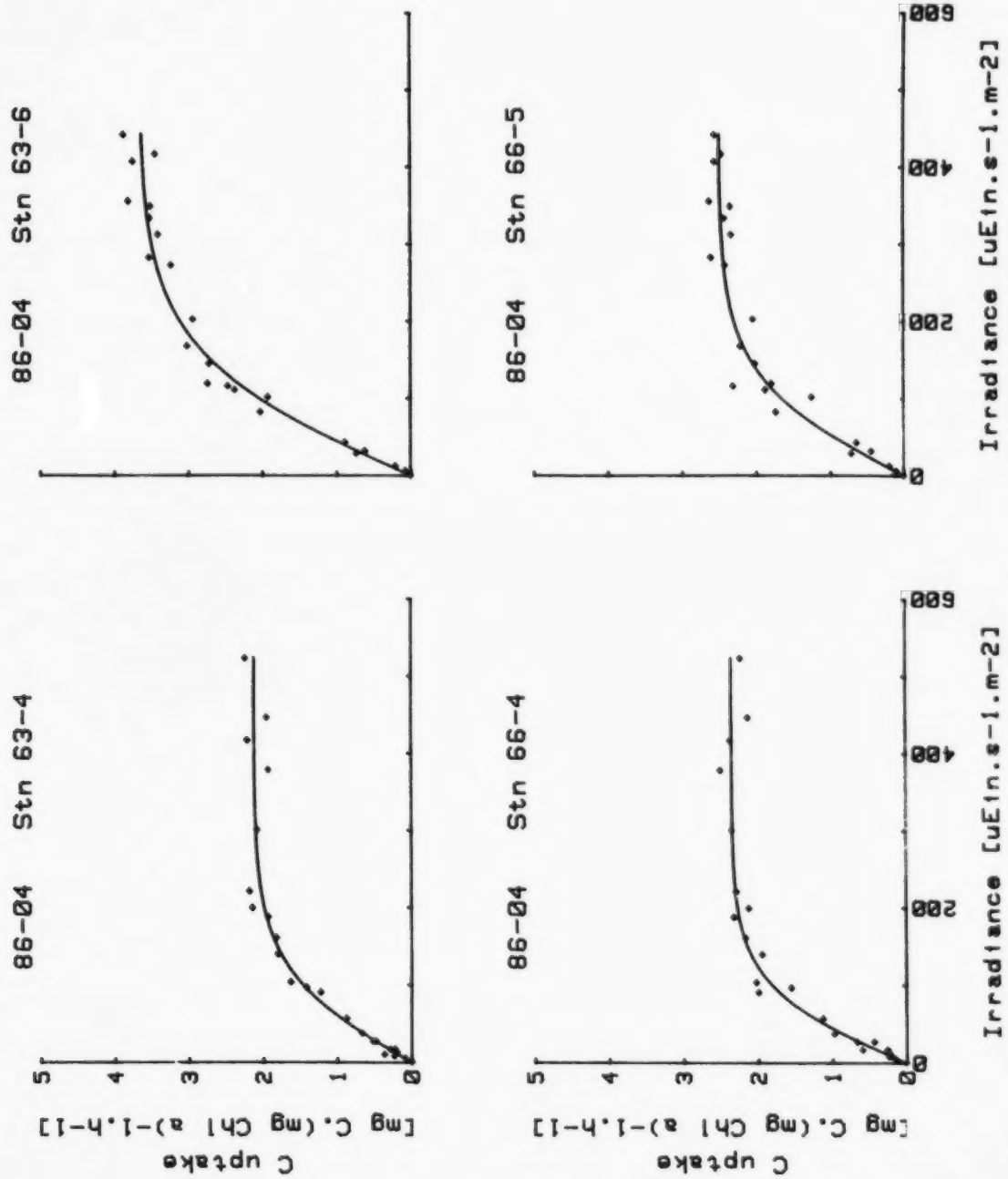
n = 25 r = 0.978 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 66-5 Time: 2023 (LAT)
2145 (PDT)
Depth: 5.4 m
Chlor a: 12.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.50 Im = 489.9
a = 0.020 Ik = 125.2

n = 25 r = 0.964 (21 d.f.)


86-04 Stn 63-6
86-04 Stn 63-4
86-04 Stn 66-5
86-04 Stn 66-4
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
200
400
600
1
2
3
4
5

Cruise: 86-04 Date: 86.08.23
Station: 68-3 Time: 2201 (LAT)
2323 (PDT)
Depth: 39.3 m
Chlor a: 2.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.20 Im = 344.9
a = 0.024 Ik = 92.3

n = 25 r = 0.751 (21 d.f.)

Cruise: 86-04 Date: 86.08.23
Station: 68-4 Time: 2201 (LAT)
2323 (PDT)
Depth: 19.0 m
Chlor a: 7.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.14 Im = 406.3
a = 0.021 Ik = 104.5

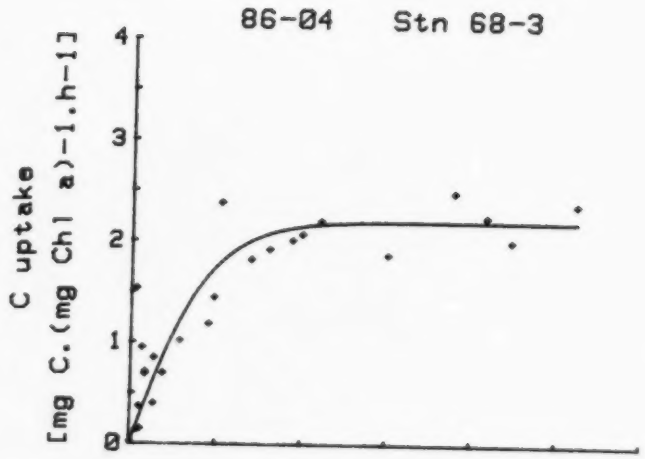
n = 25 r = 0.985 (21 d.f.)

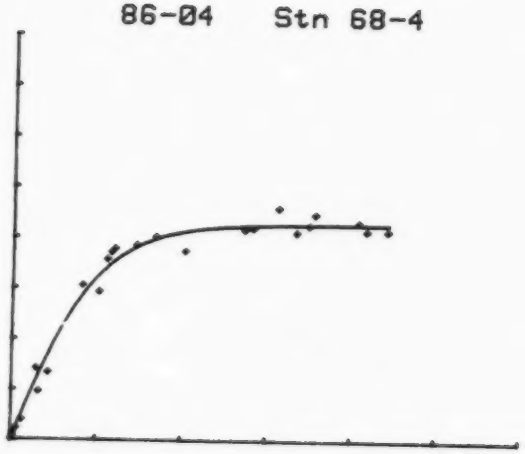
Cruise: 86-04 Date: 86.08.24
Station: 71-2 Time: 0042 (LAT)
0205 (PDT)
Depth: 24.8 m
Chlor a: 8.7 mg.m-3

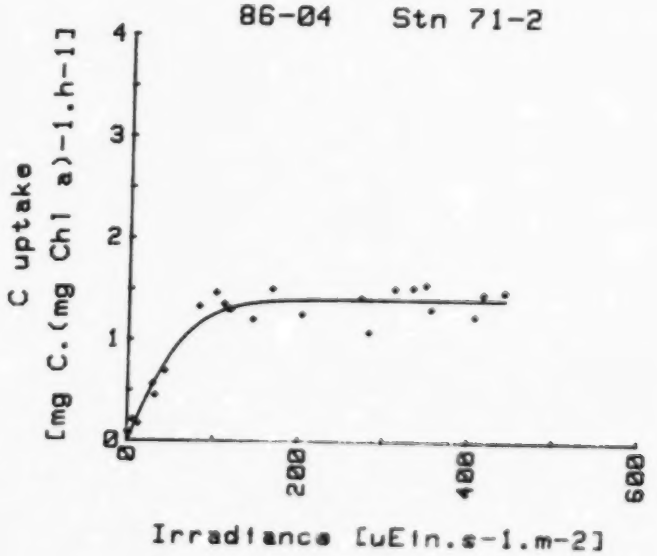
Parameter estimates: Derived parameters:

Pm = 1.41 Im = 267.6
a = 0.020 Ik = 68.8

n = 25 r = 0.944 (21 d.f.)


86-04 Stn 68-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4


86-04 Stn 68-4


86-04 Stn 71-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.24
Station: 73-2 Time: 0151 (LAT)
0315 (PDT)
Depth: 30.0 m
Chlor a: 10.98 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.82 Im = 261.0
a = 0.026 Ik = 71.2

n = 25 r = 0.962 (21 d.f.)

Cruise: 86-04 Date: 86.08.24
Station: 75-5 Time: 0402 (LAT)
0523 (PDT)
Depth: 27.5 m
Chlor a: 7.40 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.77 Im = 434.1
a = 0.017 Ik = 106.0

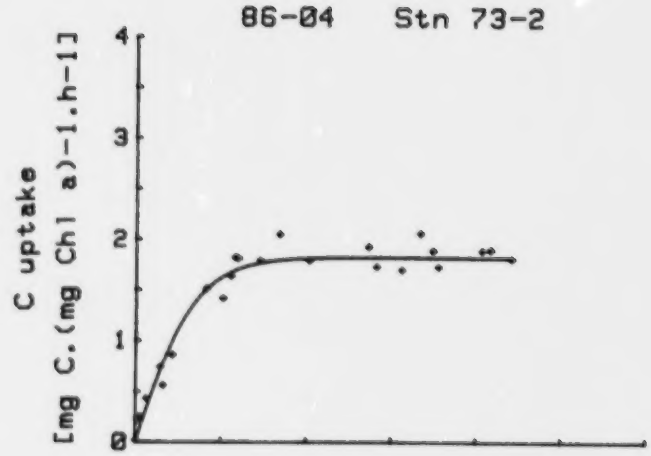
n = 25 r = 0.960 (21 d.f.)

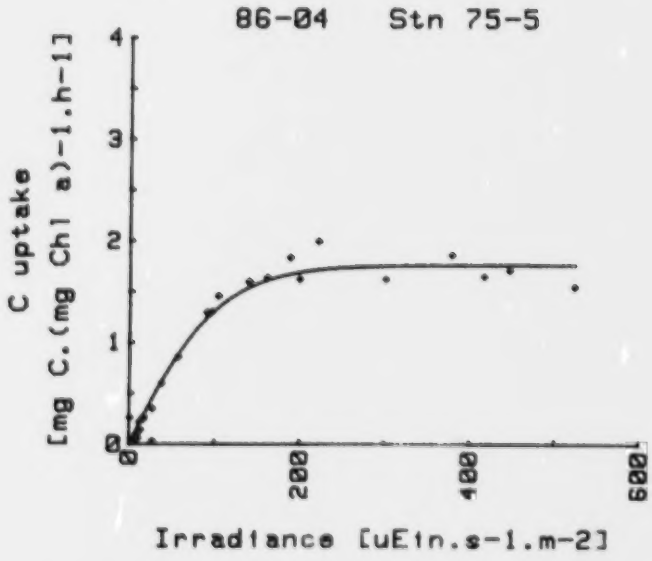
Cruise: 86-04 Date: 86.08.24
Station: 75-6 Time: 0402 (LAT)
0523 (PDT)
Depth: 17.9 m
Chlor a: 11.54 mg.m-3

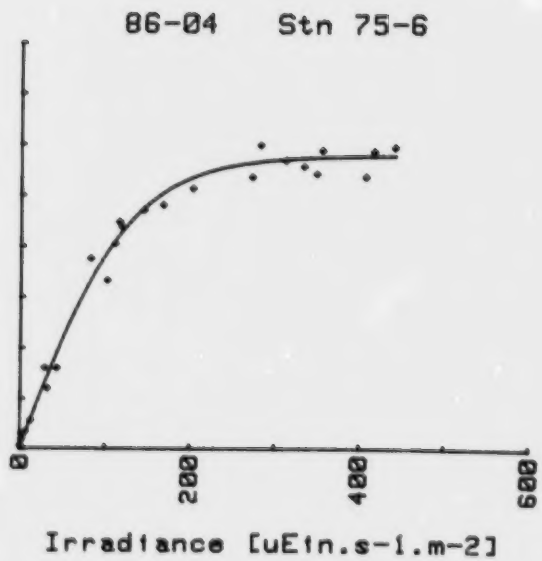
Parameter estimates: Derived parameters:

Pm = 2.90 Im = 474.2
a = 0.023 Ik = 125.8

n = 25 r = 0.987 (21 d.f.)


86-04 Stn 73-2
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4


86-04 Stn 75-5
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-04 Stn 75-6
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.24
Station: 77-8 Time: 0546 (LAT)
0712 (PDT)
Depth: 13.2 m
Chlor a: 2.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.64 Im = 271.2
a = 0.033 Ik = 79.6

n = 24 r = 0.868 (20 d.f.)

Cruise: 86-04 Date: 86.08.24
Station: 79-8 Time: 0754 (LAT)
0920 (PDT)
Depth: 21.5 m
Chlor a: 1.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.64 Im = 323.4
a = 0.029 Ik = 91.3

n = 25 r = 0.490 (21 d.f.)

86-04 Stn 77-8
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5

86-04 Stn 79-8
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.24
Station: 80-6 Time: 2025 (LAT)
2153 (PDT)
Depth: 11.3 m
Chlor a: 6.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.06 Im = 337.6
a = 0.031 Ik = 97.6

n = 25 r = 0.965 (21 d.f.)

Cruise: 86-04 Date: 86.08.24
Station: 80-7 Time: 2025 (LAT)
2153 (PDT)
Depth: 5.2 m
Chlor a: 16.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.68 Im = 408.2
a = 0.008 Ik = 84.5

n = 25 r = 0.930 (21 d.f.)

Cruise: 86-04 Date: 86.08.25
Station: 84-7 Time: 0739 (LAT)
0912 (PDT)
Depth: 26.6 m
Chlor a: 1.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.50 Im = 272.2
a = 0.032 Ik = 78.9

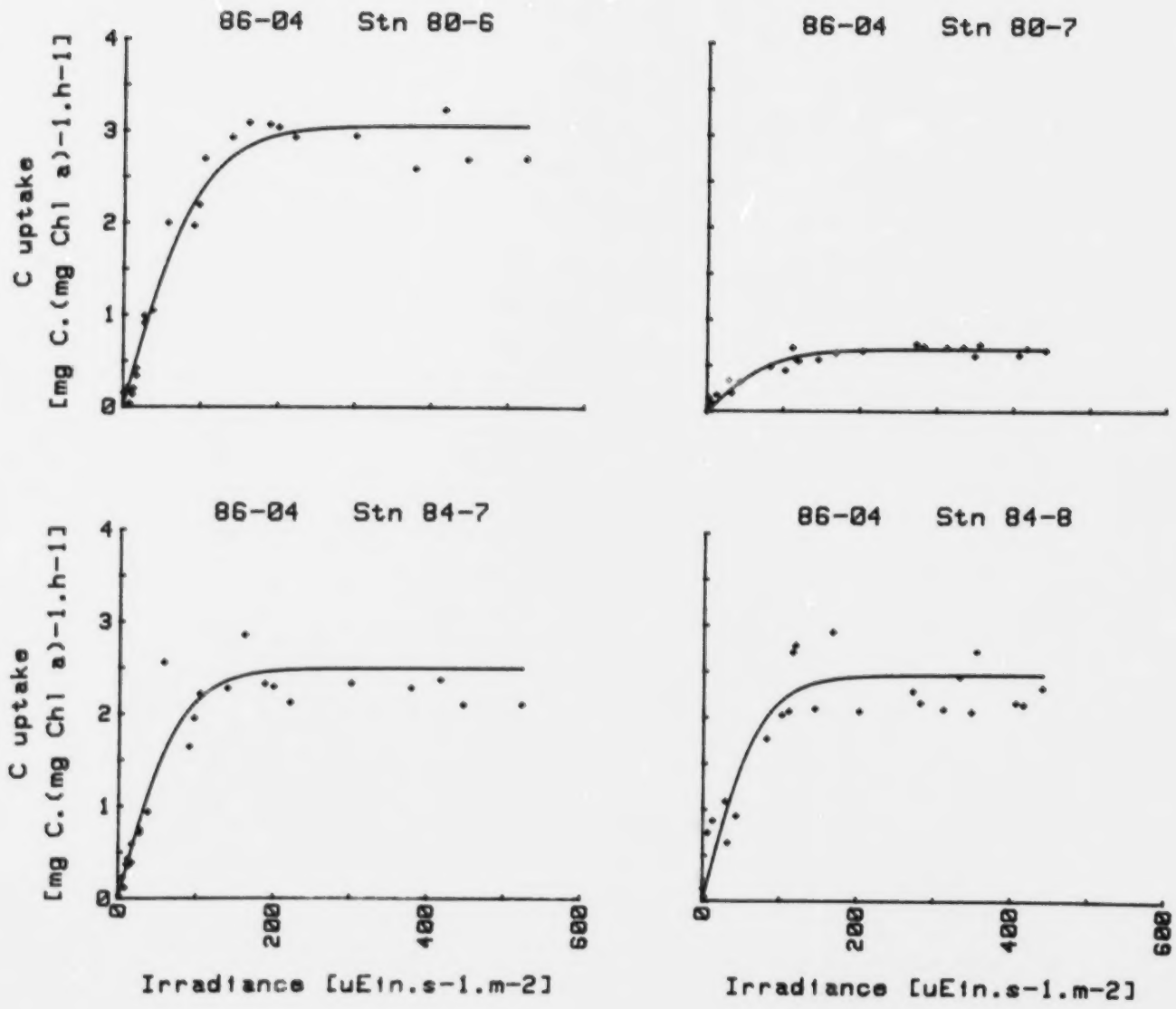
n = 25 r = 0.901 (21 d.f.)

Cruise: 86-04 Date: 86.08.25
Station: 84-8 Time: 0739 (LAT)
0912 (PDT)
Depth: 17.5 m
Chlor a: 2.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.46 Im = 241.9
a = 0.034 Ik = 71.7

n = 25 r = 0.855 (21 d.f.)


86-04 Stn 80-6
86-04 Stn 80-7
86-04 Stn 84-7
86-04 Stn 84-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
200
400
600

Cruise: 86-04 Date: 86.08.25
Station: 85-4/5/6 Time: 0941 (LAT)
1114 (PDT)
Depth: 17.4 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.72 Im = 729.0
a = 0.020 Ik = 186.3

n = 24 r = 0.728 (20 d.f.)

Cruise: 86-04 Date: 86.08.25
Station: 85-7/8/9 Time: 0941 (LAT)
1114 (PDT)
Depth: 1.4 m
Chlor a: 1.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.88 Im = 325.1
a = 0.053 Ik = 110.7

n = 25 r = 0.833 (21 d.f.)

Cruise: 86-04 Date: 86.08.25
Station: 86-7 Time: 1138 (LAT)
1311 (PDT)
Depth: 27.0 m
Chlor a: 3.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.22 Im = 288.1
a = 0.037 Ik = 87.3

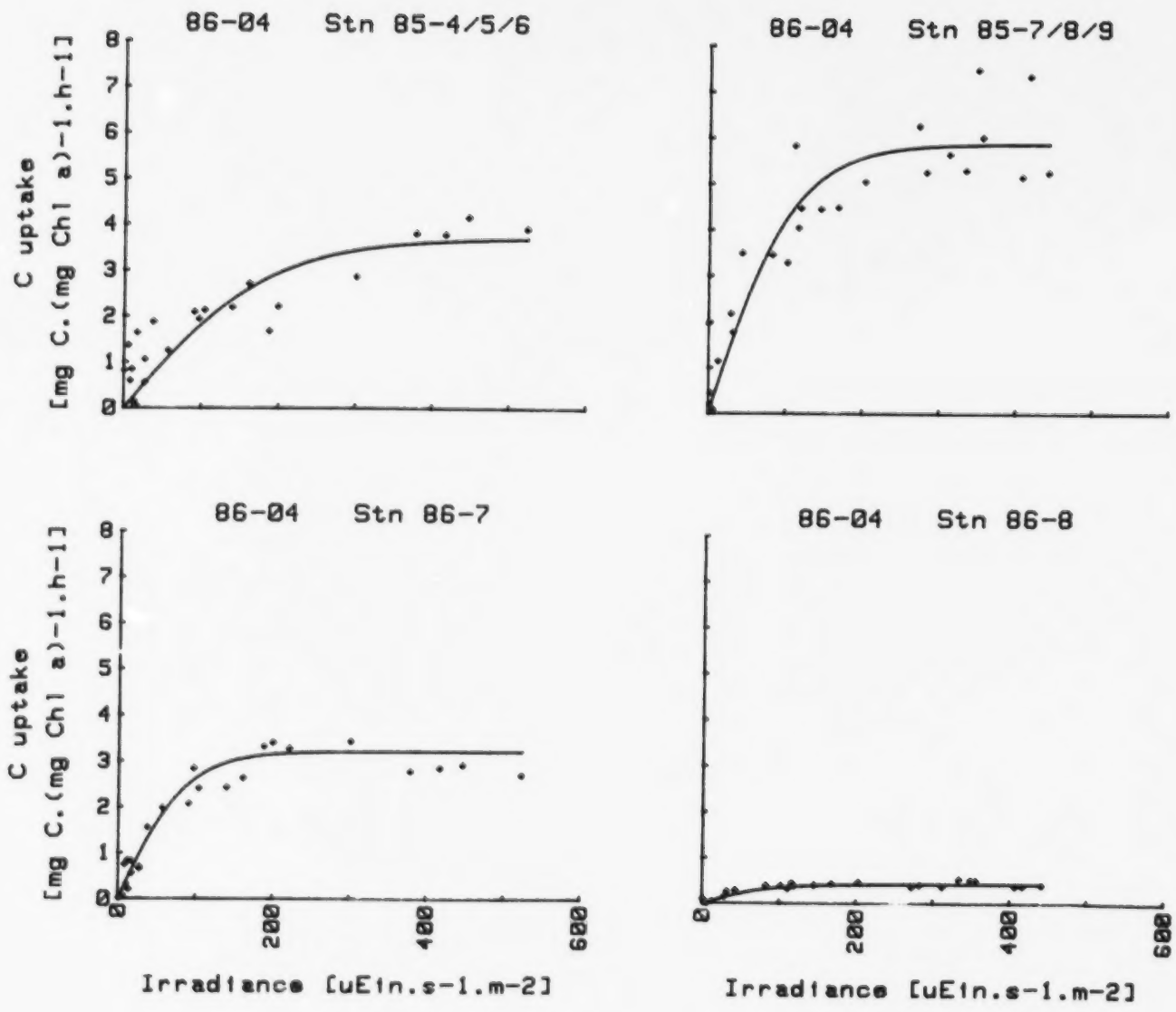
n = 25 r = 0.928 (21 d.f.)

Cruise: 86-04 Date: 86.08.25
Station: 86-8 Time: 1138 (LAT)
1311 (PDT)
Depth: 17.4 m
Chlor a: 1.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.42 Im = 428.6
a = 0.005 Ik = 81.4

n = 25 r = 0.861 (21 d.f.)


86-04 Stn 85-4/5/6
86-04 Stn 85-7/8/9
86-04 Stn 86-7
86-04 Stn 86-8
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
4
5
6
7
8
200
400
600

Cruise: 86-04 Date: 86.08.25
Station: 87-4/5/6 Time: 1341 (LAT)
1514 (PDT)
Depth: 16.8 m
Chlor a: 2.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.25 Im = 402.8
a = 0.021 Ik = 104.8

n = 25 r = 0.855 (21 d.f.)

Cruise: 86-04 Date: 86.08.25
Station: 87-7/8/9 Time: 1341 (LAT)
1514 (PDT)
Depth: 1.7 m
Chlor a: 1.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 9.10 Im = 197.8
a = 0.104 Ik = 87.4

n = 25 r = 0.881 (21 d.f.)

Cruise: 86-04 Date: 86.08.25
Station: 88-1/2/3 Time: 1538 (LAT)
1711 (PDT)
Depth: 27.2 m
Chlor a: 3.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.87 Im = 211.8
a = 0.043 Ik = 67.2

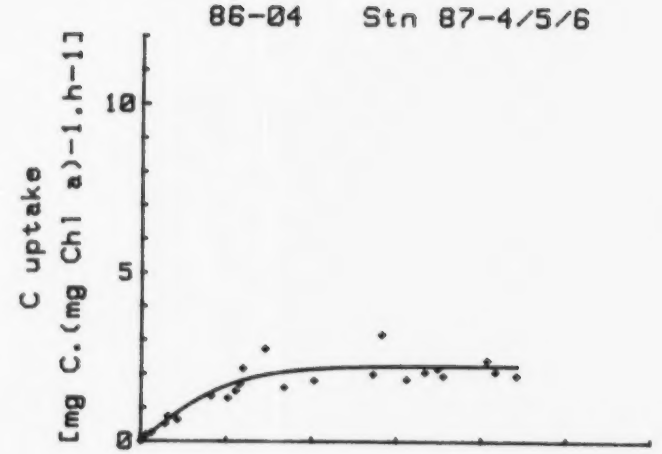
n = 24 r = 0.913 (20 d.f.)

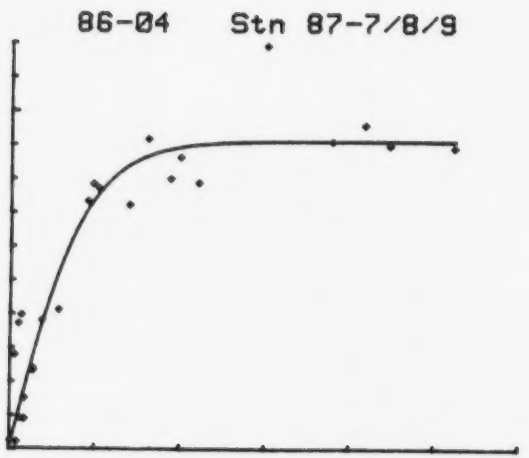
Cruise: 86-04 Date: 86.08.25
Station: 88-4/5/6 Time: 1538 (LAT)
1711 (PDT)
Depth: 17.3 m
Chlor a: 2.3 mg.m-3

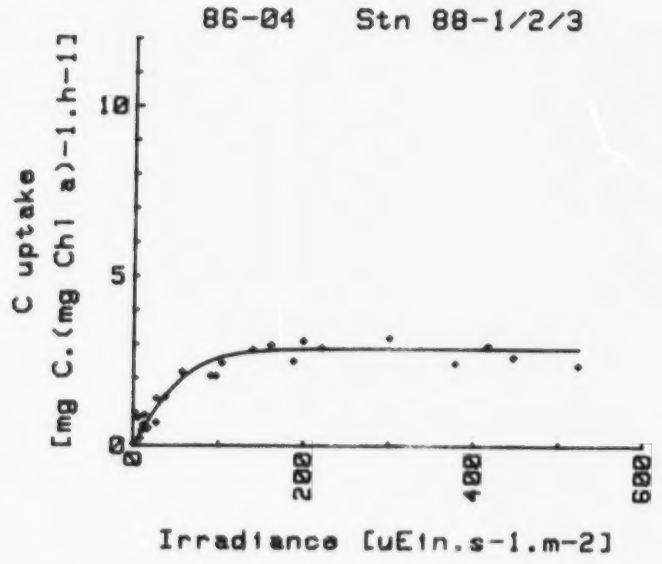
Parameter estimates: Derived parameters:

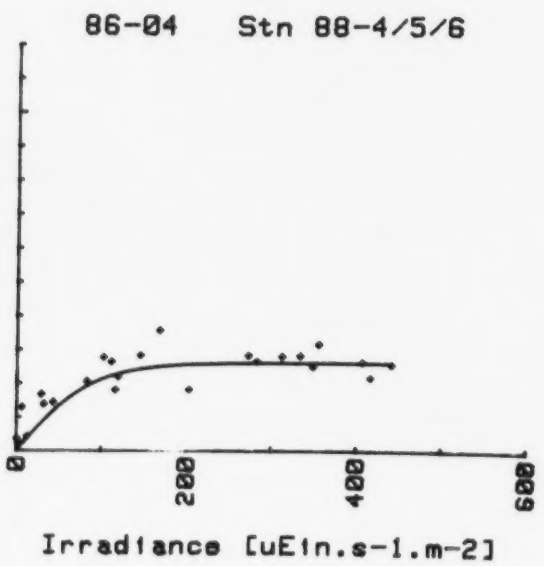
Pm = 2.62 Im = 302.6
a = 0.030 Ik = 86.5

n = 25 r = 0.725 (21 d.f.)


86-04 Stn 87-4/5/6
C uptake
[mg C.(mg Chl a)-1.h-1]
10
5
0


86-04 Stn 87-7/8/9


86-04 Stn 88-1/2/3
C uptake
[mg C.(mg Chl a)-1.h-1]
10
5
0
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-04 Stn 88-4/5/6
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04
Station: 89-8

Date: 86.08.25
Time: 1745 (LAT)
1918 (PDT)
Depth: 16.6 m
Chlor a: 2.9 mg.m-3

Parameter estimates:

Pm = 3.14
a = 0.055

Derived parameters:

Im = 164.6
Ik = 56.8

n = 25

r = 0.781 (21 d.f.)

Cruise: 86-04
Station: 90-3/4

Date: 86.08.25
Time: 1939 (LAT)
2112 (PDT)
Depth: 23.1 m
Chlor a: 1.0 mg.m-3

Parameter estimates:

Pm = 2.47
a = 0.059

Derived parameters:

Im = 119.0
Ik = 42.0

n = 25

r = 0.744 (21 d.f.)

Cruise: 86-04
Station: 90-5/6

Date: 86.08.25
Time: 1939 (LAT)
2112 (PDT)
Depth: 17.7 m
Chlor a: 2.4 mg.m-3

Parameter estimates:

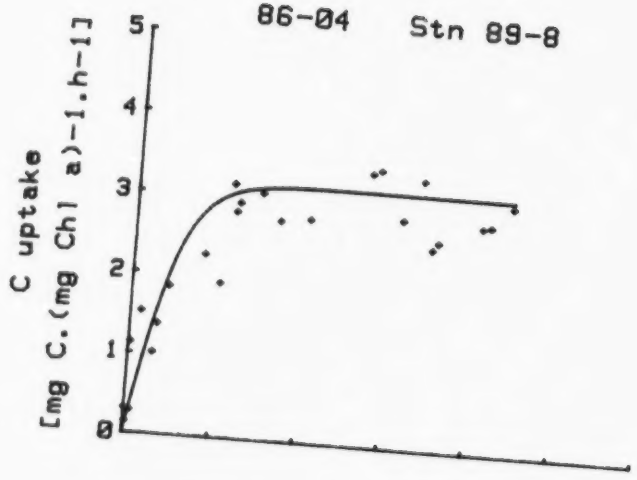
Pm = 3.22
a = 0.013

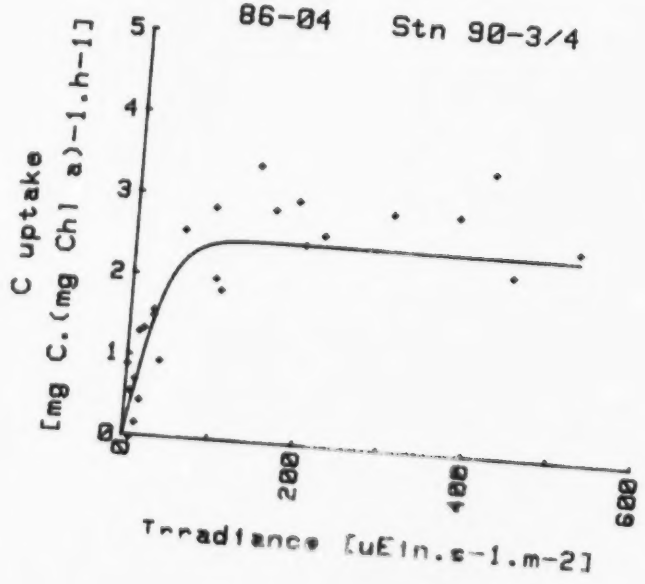
Derived parameters:

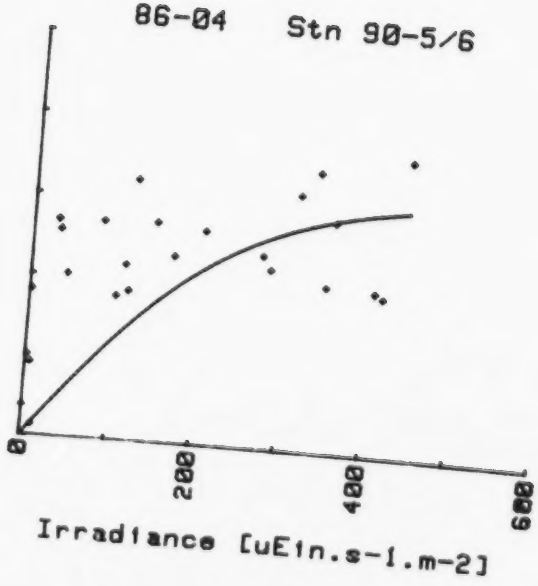
Im = 1090.8
Ik = 250.6

n = 25

r = 0.666 (21 d.f.)


86-04 Stn 89-8
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5


86-04 Stn 90-3/4
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-04 Stn 90-5/6
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.25
Station: 91-7/8/9 Time: 2126 (LAT)
2259 (PDT)
Depth: 1.7 m
Chlor a: 2.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.45 Im = 186.2
a = 0.028 Ik = 52.0

n = 25 r = 0.812 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 92-7 Time: 2351 (LAT)
0124 (PDT)
Depth: 27.4 m
Chlor a: 2.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.39 Im = 239.0
a = 0.022 Ik = 62.8

n = 25 r = 0.619 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 93-4/5/6 Time: 0146 (LAT)
0319 (PDT)
Depth: 17.4 m
Chlor a: 2.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.47 Im = 158.1
a = 0.032 Ik = 45.9

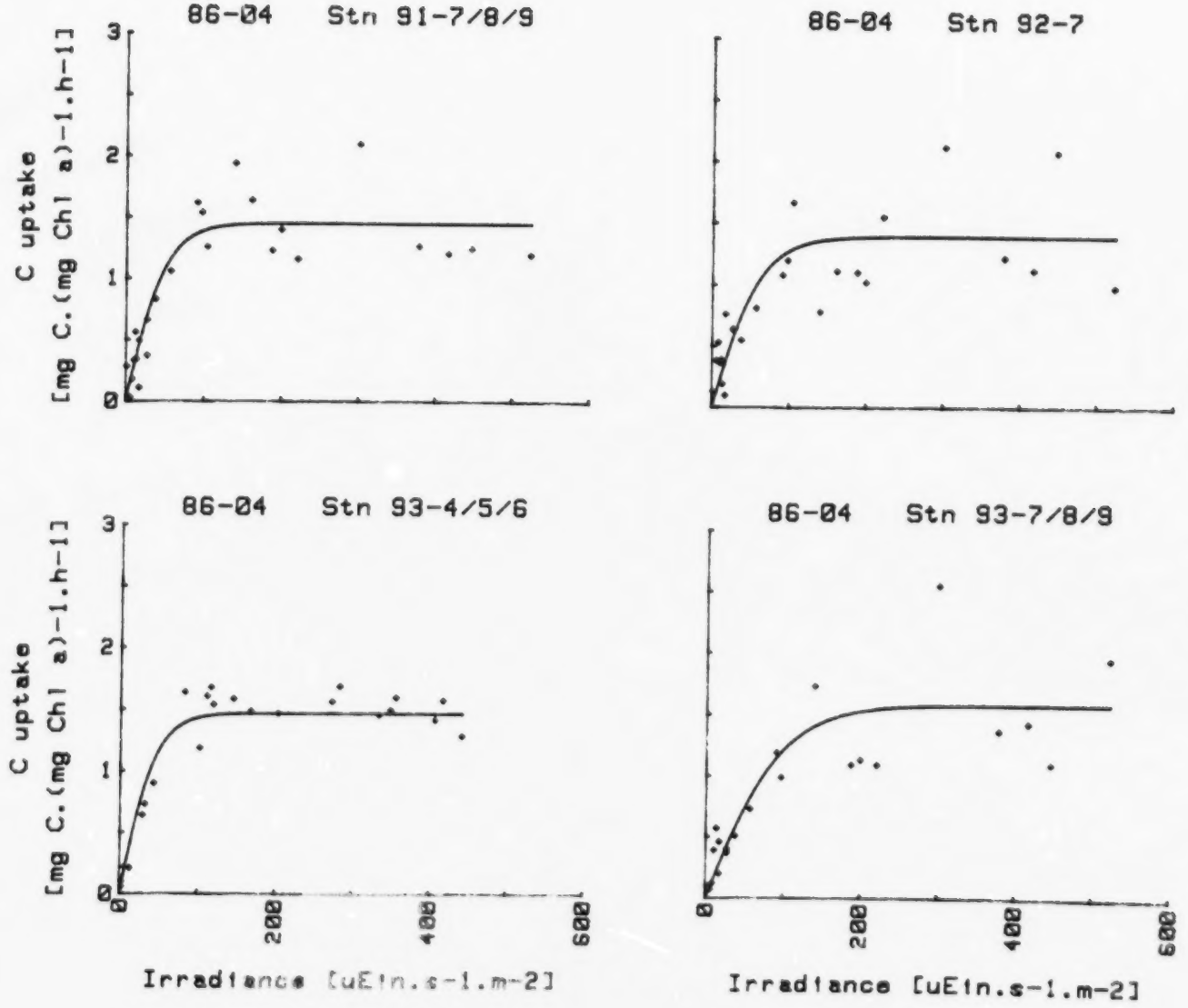
n = 23 r = 0.930 (19 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 93-7/8/9 Time: 0146 (LAT)
0319 (PDT)
Depth: 1.3 m
Chlor a: 0.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.58 Im = 409.1
a = 0.016 Ik = 98.9

n = 22 r = 0.729 (18 d.f.)


86-04 Stn 91-7/8/9
86-04 Stn 92-7
86-04 Stn 93-4/5/6
86-04 Stn 93-7/8/9
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
1
2
3
200
400
600

Cruise: 86-04 Date: 86.08.26
Station: 94-1/2/3 Time: 0336 (LAT)
0509 (PDT)
Depth: 24.8 m
Chlor a: 3.1 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.54 Im = 270.5
a = 0.032 Ik = 78.7

n = 25 r = 0.840 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 94-4/5 Time: 0336 (LAT)
0509 (PDT)
Depth: 16.2 m
Chlor a: 1.2 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.97 Im = 355.0
a = 0.030 Ik = 100.8

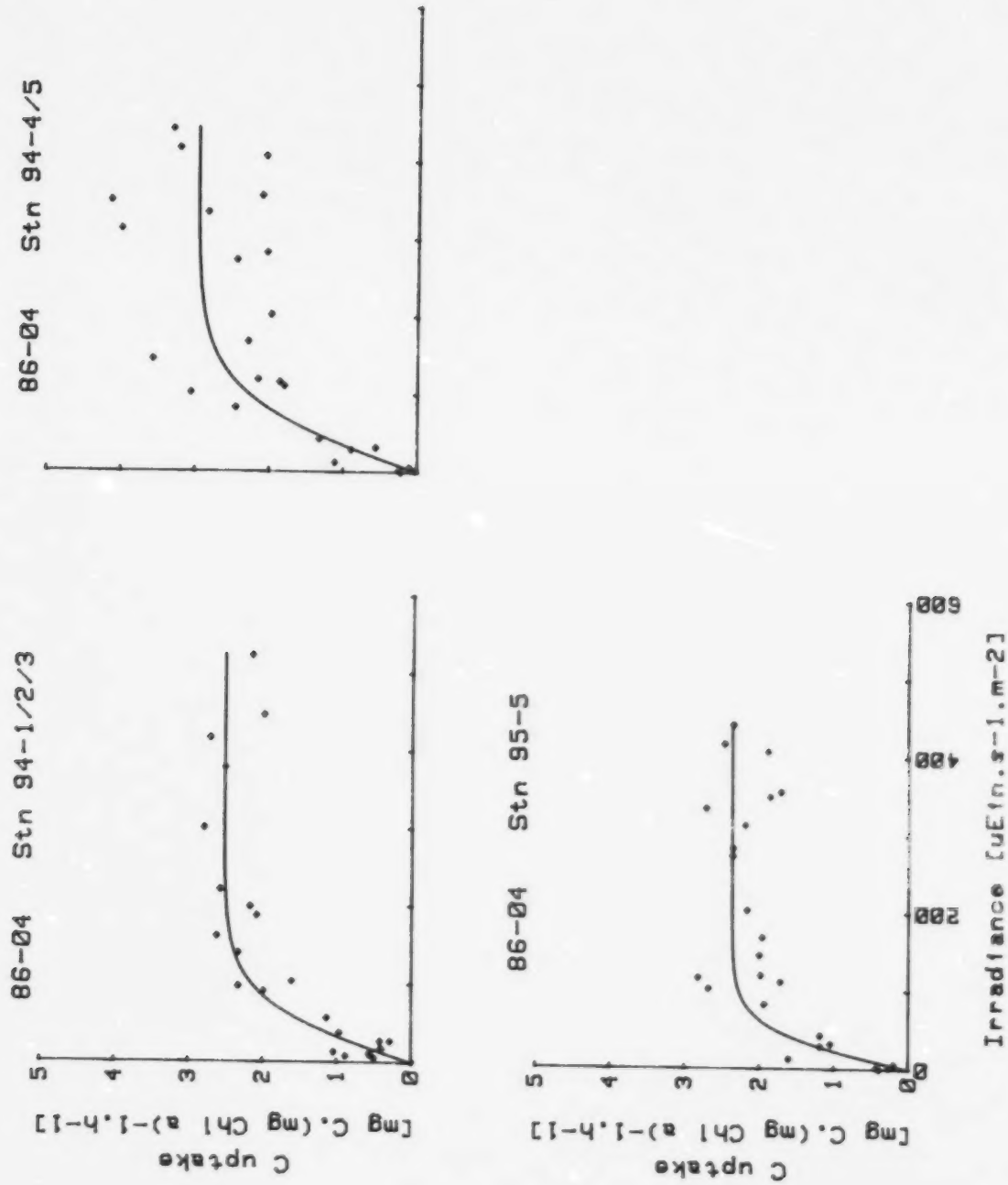
n = 25 r = 0.715 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 95-5 Time: 0531 (LAT)
0704 (PDT)
Depth: 18.9 m
Chlor a: 2.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.37 Im = [illegible]
a = 0.047 Ik = 50.3

n = 25 r = 0.715 (21 d.f.)


86-04 Stn 94-4/5
86-04 Stn 94-1/2/3
86-04 Stn 95-5
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
200
400
600
Irradiance [uE!n.s-1.m-2]

Cruise: 86-04 Date: 86.08.26
Station: 96-1/2 Time: 0747 (LAT)
0920 (PDT)
Depth: 27.7 m
Chlor a: 1.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.20 Im = 221.7
a = 0.021 Ik = 57.3

n = 25 r = 0.912 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 97-7/8 Time: 0934 (LAT)
1108 (PDT)
Depth: 20.5 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.42 Im = 826.1
a = 0.008 Ik = 172.1

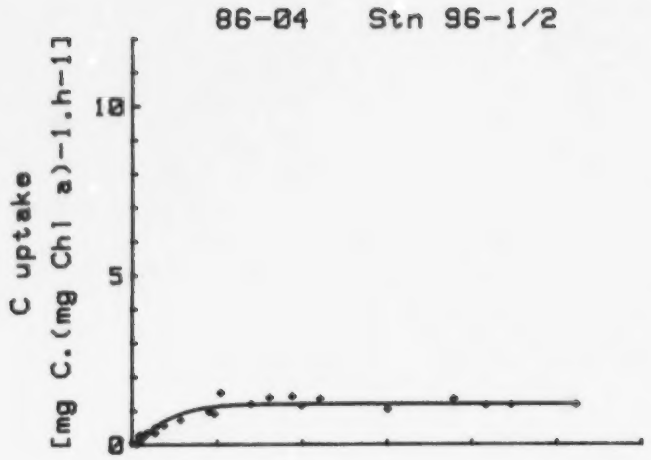
n = 24 r = 0.769 (20 d.f.)

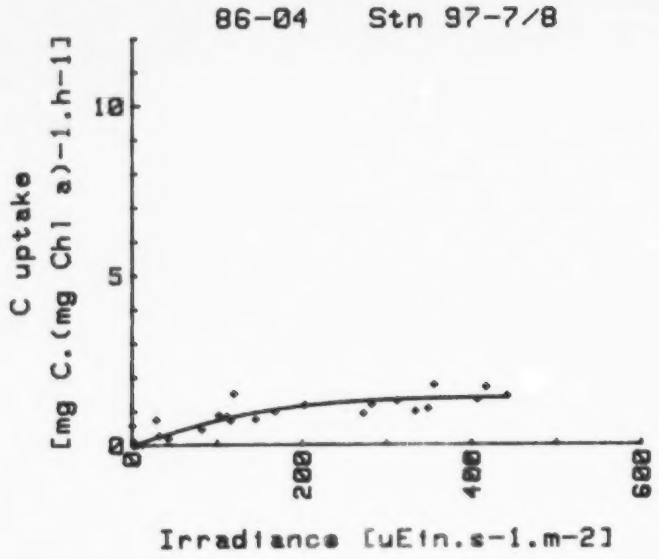
Cruise: 86-04 Date: 86.08.26
Station: 97B-1/2 Time: 0949 (LAT)
1122 (PDT)
Depth: 1.5 m
Chlor a: 0.6 mg.m-3

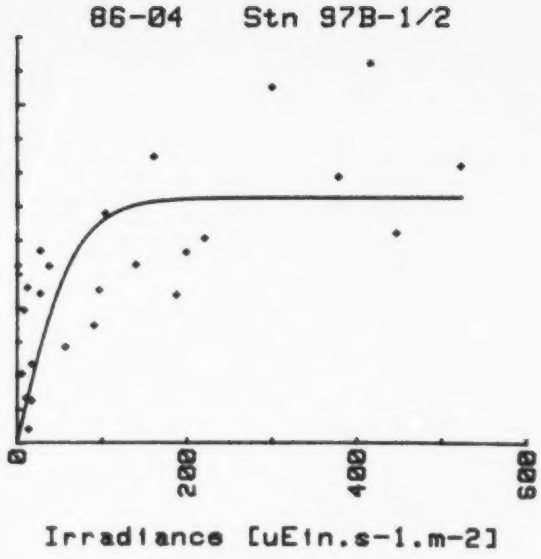
Parameter estimates: Derived parameters:

Pm = 7.26 Im = 147.1
a = 0.109 Ik = 66.4

n = 24 r = 0.424 (20 d.f.)


86-04 Stn 96-1/2
C uptake
[mg C.(mg Chl a)-1.h-1]
10
5
0


86-04 Stn 97-7/8
C uptake
[mg C.(mg Chl a)-1.h-1]
10
5
0
0
200
400
600
Irradiance [uEin.s-1.m-2]


86-04 Stn 97B-1/2
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.26
Station: 98-7 Time: 1207 (LAT)
1340 (PDT)
Depth: 30.0 m
Chlor a: 2.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.84 Im = 348.5
a = 0.029 Ik = 98.3

n = 25 r = 0.985 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 98-8 Time: 1207 (LAT)
1340 (PDT)
Depth: 20.1 m
Chlor a: 1.3 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.35 Im = 539.6
a = 0.018 Ik = 133.6

n = 19 r = 0.970 (15 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 99-5/6/7 Time: 1409 (LAT)
1542 (PDT)
Depth: 18.7 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 0.91 Im = 428.3
a = 0.010 Ik = 92.6

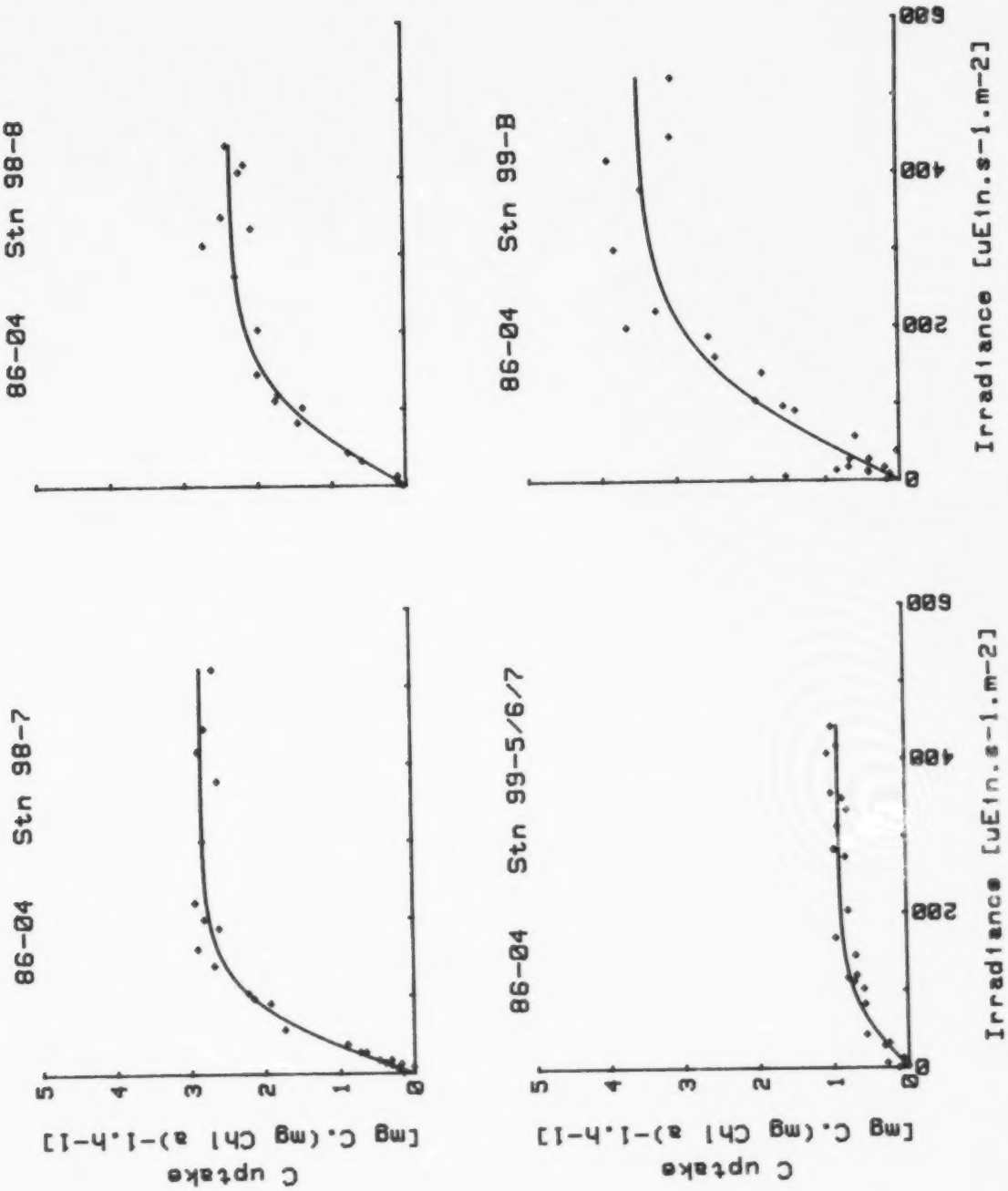
n = 25 r = 0.901 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 99-B Time: 1409 (LAT)
1542 (PDT)
Depth: 0.0 m
Chlor a: 0.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 3.50 Im = 659.8
a = 0.021 Ik = 169.9

n = 24 r = 0.917 (20 d.f.)


86-04 Stn 98-8
86-04 Stn 98-7
86-04 Stn 99-B
86-04 Stn 99-5/6/7
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
200
400
600
1
2
3
4
5

Cruise: 86-04 Date: 86.08.26
Station: 100-1/2/ Time: 1541 (LAT)
1714 (PDT)
Depth: 29.7 m
Chlor a: 2.6 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.66 Im = 396.7
a = 0.025 Ik = 107.3

n = 25 r = 0.922 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 100-7/8/ Time: 1541 (LAT)
1714 (PDT)
Depth: 19.9 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.63 Im = 147.4
a = 0.038 Ik = 68.7

n = 23 r = 0.719 (19 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 102-3 Time: 2044 (LAT)
2217 (PDT)
Depth: 29.1 m
Chlor a: 2.5 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.97 Im = 111.5
a = 0.052 Ik = 37.8

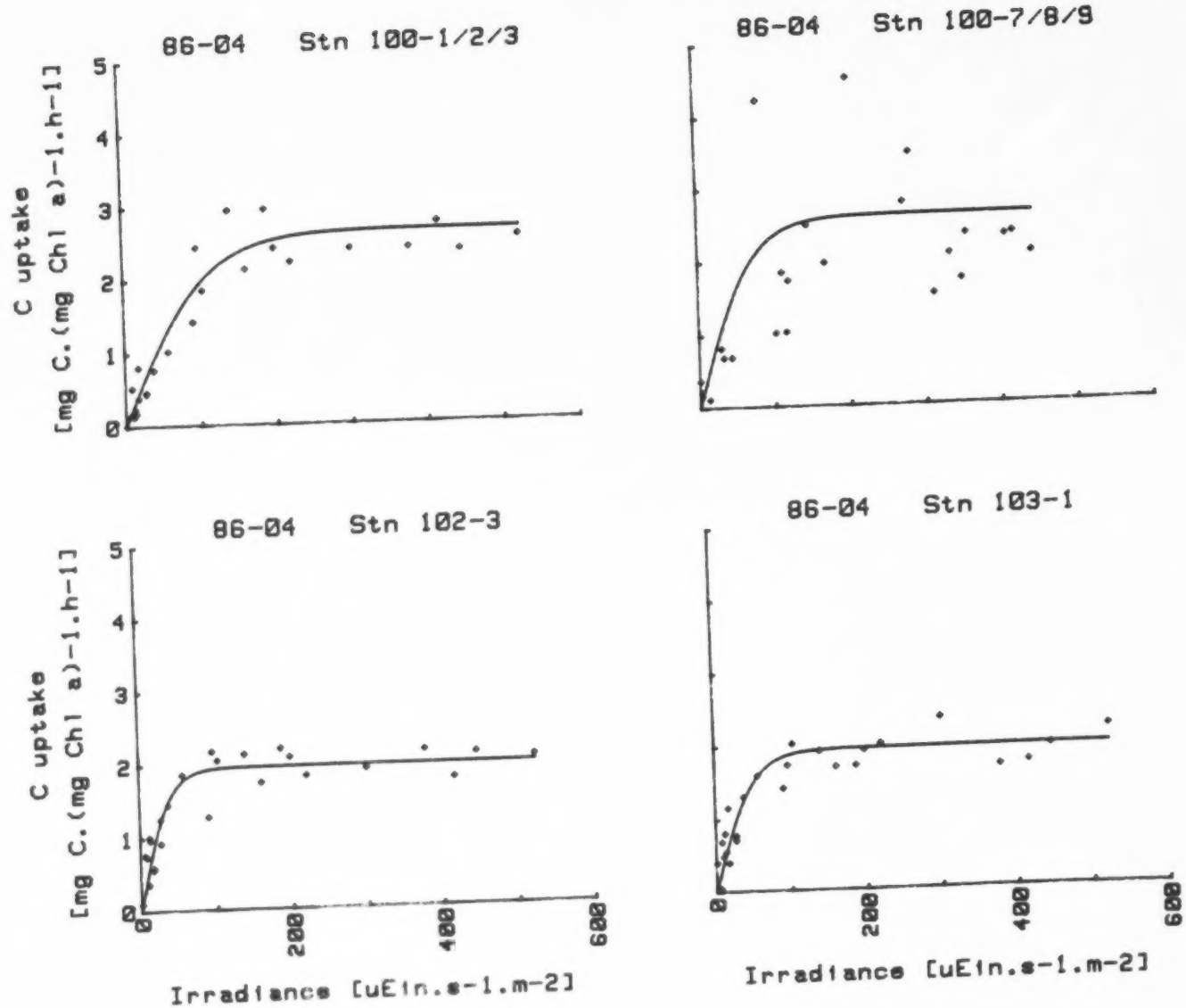
n = 25 r = 0.840 (21 d.f.)

Cruise: 86-04 Date: 86.08.26
Station: 103-1 Time: 2208 (LAT)
2341 (PDT)
Depth: 29.6 m
Chlor a: 3.0 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.95 Im = 164.0
a = 0.039 Ik = 50.4

n = 25 r = 0.848 (21 d.f.)


86-04 Stn 100-1/2/3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
86-04 Stn 100-7/8/9
86-04 Stn 102-3
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
5
0
200
400
600
Irradiance [uEin.s-1.m-2]
86-04 Stn 103-1
0
200
400
600
Irradiance [uEin.s-1.m-2]

Cruise: 86-04 Date: 86.08.27
Station: 105-1 Time: 0138 (LAT)
0311 (PDT)
Depth: 30.4 m
Chlor a: 2.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.85 Im = 192.9
a = 0.033 Ik = 56.4

n = 25 r = 0.848 (21 d.f.)

Cruise: 86-4 Date: 86.08.27
Station: 105-2 Time: 0138 (LAT)
0311 (PDT)
Depth: 19.4 m
Chlor a: 1.4 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.04 Im = 80.6
a = 0.068 Ik = 30.0

n = 25 r = 0.662 (21 d.f.)

Cruise: 86-04 Date: 86.08.27
Station: 106-2 Time: 0403 (LAT)
0536 (PDT)
Depth: 19.8 m
Chlor a: 1.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.29 Im = 334.0
a = 0.025 Ik = 90.8

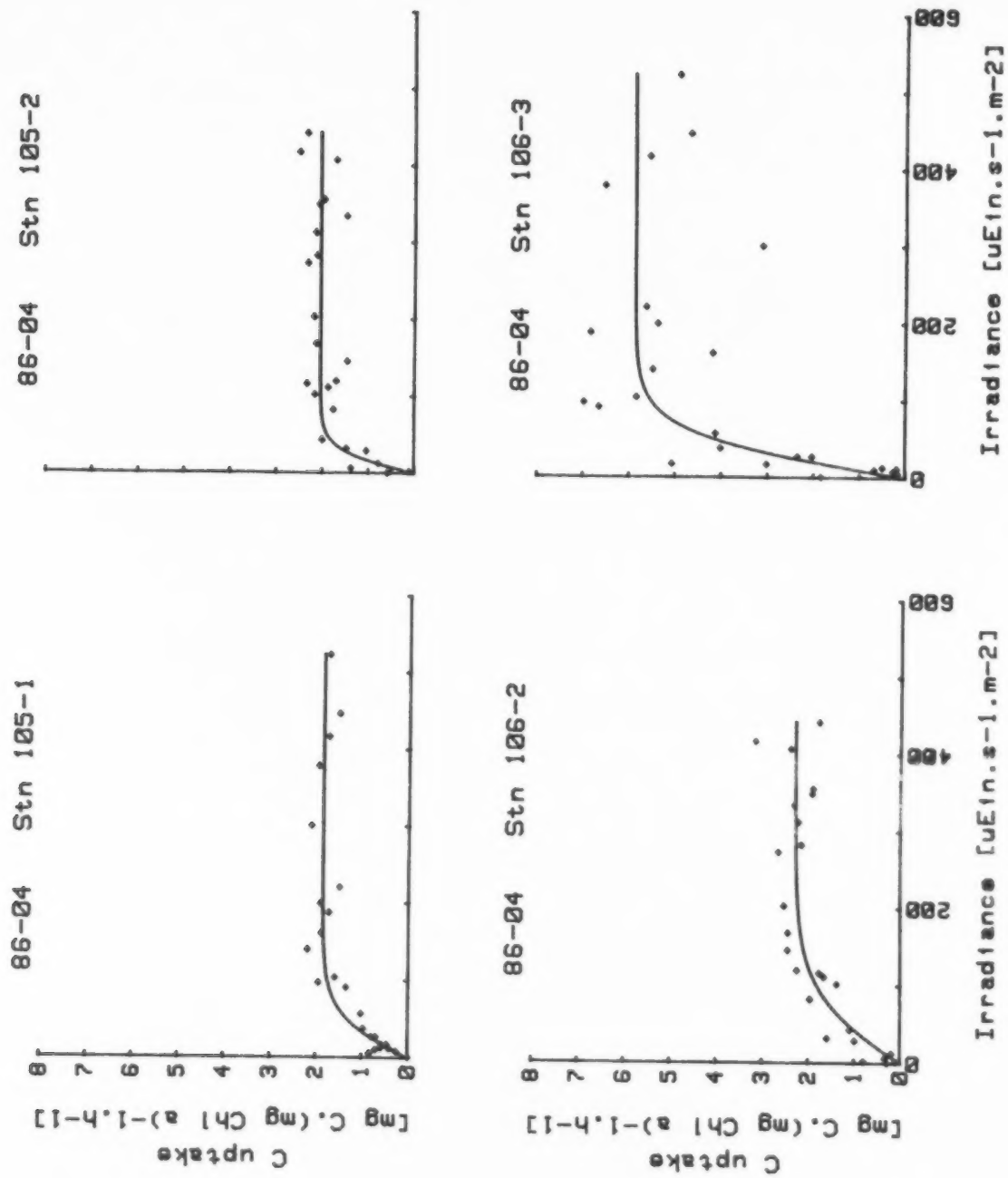
n = 25 r = 0.775 (21 d.f.)

Cruise: 86-04 Date: 86.08.27
Station: 106-3 Time: 0403 (LAT)
0536 (PDT)
Depth: 0.9 m
Chlor a: 0.8 mg.m-3

Parameter estimates: Derived parameters:

Pm = 5.87 Im = 128.1
a = 0.104 Ik = 56.6

n = 25 r = 0.684 (21 d.f.)


86-04 Stn 105-2
86-04 Stn 106-3
86-04 Stn 105-1
86-04 Stn 106-2
C uptake
[mg C.(mg Chl a)-1.h-1]
Irradiance [uEin.s-1.m-2]
0
200
400
600
1
2
3
4
5
6
7
8

Cruise: 86-04 Date: 86.08.27
Station: 107-7 Time: 0611 (LAT)
0744 (PDT)
Depth: 31.0 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.00 Im = 327.8
a = 0.023 Ik = 86.9

n = 25 r = 0.979 (21 d.f.)

Cruise: 86-04 Date: 86.08.27
Station: 107-8 Time: 0611 (LAT)
0744 (PDT)
Depth: 21.0 m
Chlor a: 1.9 mg.m-3

Parameter estimates: Derived parameters:

Pm = 2.48 Im = 261.9
a = 0.032 Ik = 76.4

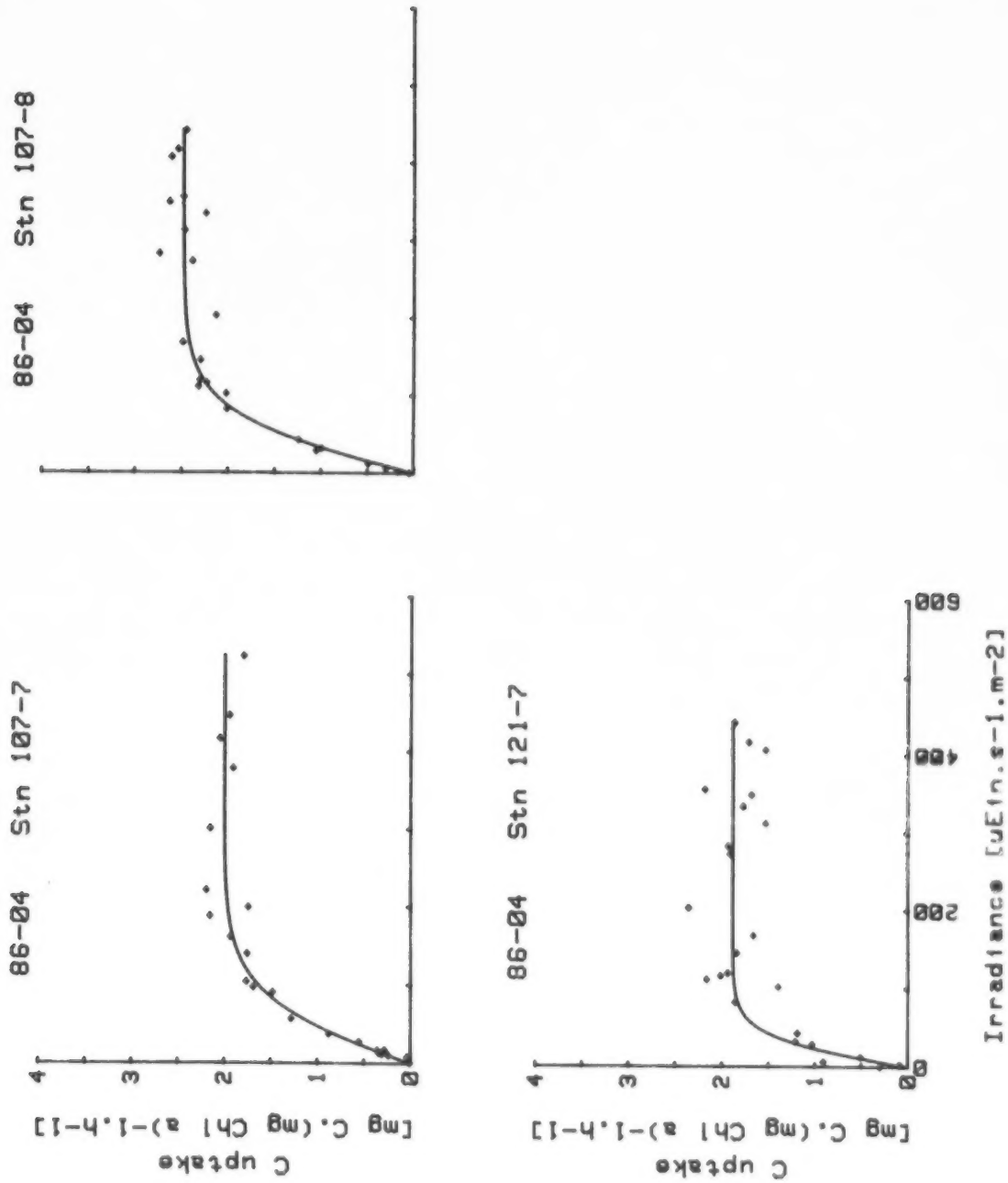
n = 25 r = 0.980 (21 d.f.)

Cruise: 86-04 Date: 86.08.28
Station: 121-7 Time: 0945 (LAT)
1109 (PDT)
Depth: 32.8 m
Chlor a: 0.7 mg.m-3

Parameter estimates: Derived parameters:

Pm = 1.89 Im = 119.6
a = 0.048 Ik = 39.4

n = 25 r = 0.835 (21 d.f.)


86-04 Stn 107-8
86-04 Stn 107-7
86-04 Stn 121-7
C uptake
[mg C.(mg Chl a)-1.h-1]
0
1
2
3
4
0
200
400
600
Irradiance [uEin.s-1.m-2]